

THIS MONTH: 605 CHICAGO AREA BULLETIN BOARDS March 1993

BOARDWATCH

MAGAZINE

Guide to Online Information Services and Bulletin Boards

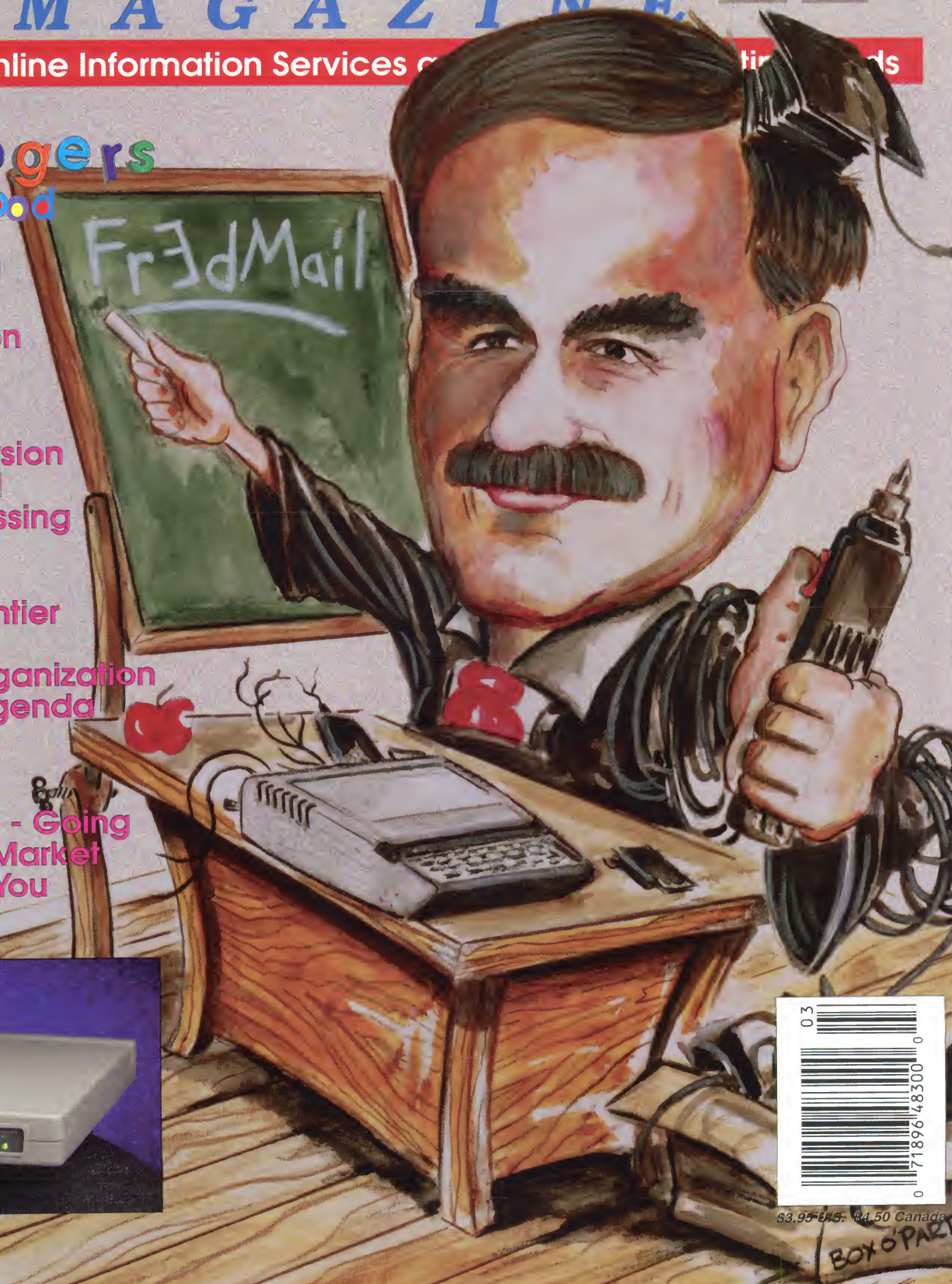
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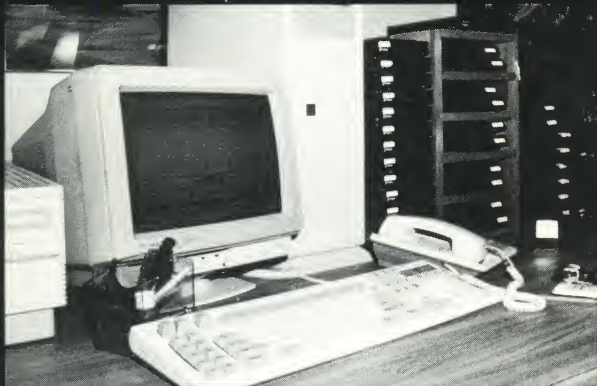
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EDITOR'S NOTES - THE EMERGING THIRD PARTY BBS SOFTWARE MARKET	6
LETTERS	7
TELEBITS	14
AT&T INTROS SYSOP DEAL ON 14.4kbps MODEMS	14
HAYES AND MULTI-TECH BURY LEGAL HATCHET	15
PRODIGY SENDS MAIL TO SOMALIA - BUT ELIMINATES 250 EMPLOYEES	18
BOARDWATCH 100 READER'S CHOICE BBS CONTEST UPDATE	18
FILE COMPRESSION WARS REVISITED - PKWARE RELEASES VERSION 2.04c of PKZIP	19
ZYXEL USA NAMES WINNERS IN BBS CONTEST	24
MCAFFEE ASSOCIATES ANNOUNCES SHAREWARE CONTEST	26
DIGITAL PHOTOGRAPHY ADVANCES BIT-BY-BIT	26
KODAK PHOTO CD	26
EDUCATION IN THE MATRIX: THE FrEdMail NETWORK	32
MACINTOSH BBS NEWS	38
WITHOUT A CLUE	38
WHY ARE WE DOING THIS?	39
MAC BBS OF THE MONTH	42
LEGALLY ONLINE - A SURPRISING REVERSE ON REVERSE ENGINEERING	43
INTERNET NOTES	46
DENVER FREE-NET INTRODUCED	46
OKLAHOMA UNIVERSITY BBS - CONNECTING DOS-BASED BULLETIN BOARDS TO THE INTERNET	49
PRIVACY AND ANONYMITY ON THE INTERNET	52
NEW E-MAIL ADDRESS DIRECTORY ANNOUNCED	55
AARL INFORMATION SERVER	56
MAJOR CHANGES AT THE ELECTRONIC FRONTIER FOUNDATION	64
THIS MONTH'S LIST: CHICAGO ILLINOIS	69
LIST OF BBS KEEPERS	74
NATIONAL LIST OF SELECTED BBS	82

Boardwatch Magazine (ISSN:1054-2760) is published monthly at an annual subscription rate of **\$36** (\$99 Overseas) by Boardwatch Magazine, 7586 West Jewell Ave., Suite 200, Lakewood, CO 80232. Second Class Postage Paid at Denver, CO.
POSTMASTER: Send address changes to: Boardwatch Magazine, 7586 West Jewell Ave., Suite 200, Lakewood, CO 80232

EDITOR'S NOTES

In the never ending quest to hammer BBS software into a proper form to be all things to all people, a somewhat remarkable thing has happened while none of us were actually looking. Most authors of BBS software packages can barely make a living while essentially four packages have developed into companies of sufficient size to form a bare niche. But another element has developed in the past year that we just frankly didn't expect - third party developers. These are entrepreneurial software programmers that produce add-on utilities, door programs, etc. to enhance basic BBS software packages. The news is, some of them are beginning to thrive.

For a number of years there has been a cadre of programmers doing door programs for PCBoard and Wildcat, TDBS applications for TBBS, and add-on modules for Galacticomm's The Major BBS. They've developed numerous utilities to essentially extend the usefulness of the BBS software toward their vision of what you ought to be able to do online with mail gateways, credit card utilities, CD-ROM managers, file management utilities, and various enhancers and fixers of bewildering variety. But until now, it barely made for a good hobby. A couple of individuals did ok, including Sparky Herring with his QWK mail door, and a few others. But for most, it was a Spartan existence that might provide a new machine every year or so - a very modestly profitable hobby at best.

In the past year, there has been a little noticed sea change in this area with some surprising results. The third-party software utilities market for these BBS software packages has rather suddenly gained legs - economically speaking. Major BBS now sports nearly 50 software developers clustered around this popular BBS package. They offer a myriad of games and utilities to further empower the Major, perhaps even promote it to Colonel. They've been there for some time, but suddenly, they are starting to make a bit of money.

eSoft's TBBS got off to a bit of a slow

start while the apostles contemplated the uses of their dBASE clone TDBS language. But apparently, the waters cleared on that front too as there are now hundreds of these dBASE applications making the rounds to improve the TBBS chat function, offer multiplayer games, and entire replacements for the userlog, message base, and file management functions of the original software. This particular group sports not only developers, but distributors, VARS, and installers all competing vigorously, developing furiously, and cashing checks in the process.

And we're seeing some similarly serious development in the third party group supporting Wildcat! and PCBoard with mail gateways of impressive variety, the ever present door programs, and more. And this trend continues to every level of DOS and UNIX BBS software, down to the very smallest system.

The most amazing thing is that while the core BBS software developers can hardly be measured software giants, this incredibly varied third party market is thriving economically. Any number of them have quit the "day job" and are developing add-ons full time. And for some, it is starting to pay off in a good living out of a small shop with a minimum of form and an emphasis on substance. We spoke with one distributor of these programs the other day and learned that he had just done nearly \$40,000 in a single month pandering esoteric programs that if he TOLD you what they were, if you didn't actually run the core BBS software, you still wouldn't know what it was they did. Another who barely dabbles in the sport as a hobby venture whacked out an online adventure game that caught on a bit quickly and somehow about \$5000 showed up in his mailbox in the first 60 days. Hardly a living, and hardly enough to get Philip the Kahn and Dollar Bill any more shook up than they already are, but a watershed event in the BBS community nonetheless.

While the basic BBS software developer usually offers a handful of packages, some of these third party alliances and groups are touting catalogs with 40 or more little utilities ranging from \$39 up to three or four hundred dollars each.

One vendor just makes it a habit to offer "The Works" - meaning whatever he's currently offering in a basket, at \$1095. The point here is that you can spend more on add-ons for BBS software than you did for the original software, and potentially some of these third party "catalogs" of utilities could become a more substantial business than the original BBS software package.

And for BBS operators, it can all be a welcome embarrassment of riches. Whatever limitation you chafe under using your current software, it is now almost assured that someone else is chafing under the same little problem, and probably either working on a solution or already offering one at \$129. And this leads to more varied and interesting systems dependent on the final tapestry the BBS operator weaves from a combination of the original BBS software and the add-ons they select.

For magazine editors, it's not quite so cozy. Whatever you THOUGHT a BBS package was good for, or weak at, from testing the core vendor packages and reading the specs - is becoming almost meaningless if you don't quite thoroughly survey the entire third party market for that software as well. If a program doesn't do FidoNet mail at all, but a third party developer offers a remarkably slick package for \$69 that allows it to carry FidoNet mail with all the aplomb and acumen of an Opus system, then DOES the original package essentially have the capability? Or does it not?

And no where outside of operating system software does such a robust market exist. There have always been a few add-ons for Word Perfect and Lotus 123 to provide macros and make life a little easier. But most of the BBS software packages are in the realm of HUNDREDS of utilities ranging from the barely noticeable to near replacements for the original package and several dozen pretty serious developers clustered around each of the major BBS titles. We met a small 4-man group at COMDEX that had escaped the horrors of hardware retailing and was serious as a heart attack about developing add-ons for Wildcat! They've got us persuaded they have a good thing going.

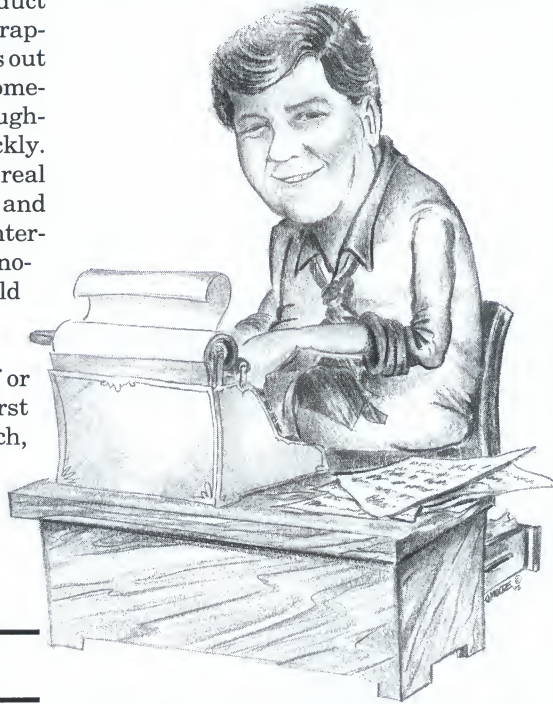
Most of these groups only sell a few hundred copies of each title, but the prices have actually risen in recent years, and most of them are small guerrilla style companies operating on a shoestring with low overhead and chumming out half a dozen titles or more in a year. For the one to five man shop, it's a living - and a lot of fun. And some of them are starting to sprout product support lines, offices, and all the trappings of real companies. If word gets out that there is a living in all this somewhere, get clear of the main thoroughfares. It could catch fire pretty quickly. If it does, all bets are off on what the real limits are to what BBS operators and callers can do online, and a very interesting and exciting new period of innovation could be in the offing. We could live with that...

This issue marks the beginning of or seventh year of publication. The first Boardwatch was published in March, 1987.

Jack Rickard
Editor Rotundus

has changed since you last called:

Through a fortunate mishap (customer returned the machine) the board now runs on a Quadra 700. I have installed a Hurdler II Quad card and the modem lines run off of that. Two USR V.32bis modems answer the (312)702-2146 line, and I added a 2400 USR to answer a new



LETTERS

Address correspondence to **LETTERS TO THE EDITOR**, Boardwatch Magazine, 5970 South Vivian Street, Littleton, CO 80127 or by Internet electronic mail to **letters@boardwatch.com**, or by FidoNet to **LETTERS** at **1:104/555**

Bill,

Many thanks for your very complimentary write-up in the December Boardwatch.

After Thanksgiving, I stopped by a Tower Records store here in Chicago that carries the magazine. I read through it and had to chuckle: you really did a wonderful job of writing up our board. I am grateful, and the article (along with the increased number of calls your article has lead to) are inspiring me to make the board here even better.

Here is a quick update on how the board

line at (312)702-3395. Many callers dial in using 2400 bps and even 1200 bps modems, and it didn't seem desirable to tie up the high-speed lines in that way.

I also added the "NetConnect" module which has made the maintenance of the board much easier for me, as well as giving users scattered around Campus the opportunity to connect directly to the board and take advantage of Ethernet transfer speeds which run anywhere from about 3500 cps to 14000 cps. Now I can FTP files from my machine (say from the Stanford archive) and zip them right over to the Quadra. In the Summer I had to do all of this via 800K diskette and it limited the amount of material that I could get to in a single day.

A lot of people have called since your article and I know that a number of them called specifically as a result of reading your review. Again, my warmest thanks. The interest level has taken

off thanks to you.

I have ordered all the parts for the FidoNet node: Tabby v3.0, F1, and TFLink. To date, only TFLink has arrived. But the time schedule for linking up to FidoNet appears to be either the end of December or sometime in January. The host edition is now V3.0B22, and there are very welcome advantages in terms of handling multiple lines. In addition the sumex-aim.stanford.edu Info-Mac CD-ROM is on it's way, and it will be available as soon as it gets here. I post the Info-Mac digests as they arrive by electronic mail.

Looking ahead, I have started gathering the information that I will need to make this into a FidoNet/Internet gateway. Currently there is no such gateway in the Chicago area. All of this has another TF sysop, Eric Vann of Beezodog's Place, very excited. He has extended a great amount of help and encouragement to me. He would like to put together a comprehensive Chicagoland Fido echo and I'm all for that.

In the meanwhile, many of the text information files and price lists are being munged so that they are in a suitable format for a Gopher Internet server. That should happen this week. Gopher is an amazing Internet "distributed search and retrieval system" developed at the University of Minnesota. The links and ease-of-use for first time users are truly astounding. All of this is very exciting and it is keeping me quite busy. Gopher will run simultaneously on along with the TF hosts on the Quadra.

It's been a wonderful experience so far. I am learning more about the Internet, about FidoNet, and about Telecomputing from all the people I meet in my electronic travels.

Now all I have to do is send in my subscription check to "Boardwatch"!

Happy Holidays

Eric Hoffman
Campus Computer Stores
University of Chicago



Dear Jack,

I have been reading with interest the growing trend toward graphical BBS's being seen in various places throughout Boardwatch over the last little while. Paging around the December issue, I can find at least three separate systems for graphics, NAPLPS, FracTerm, and RIP. In the January issue, you answer a letter on this issue with the comment that NAPLPS will most likely become the de-facto standard.

I thought I would comment on this issue myself. I think it is very important to note that none of these systems are GUI BBS's. While the creators may disagree, it really comes down to the definition of "graphical".

Let's say I write a terminal program that looks in the data stream for the GIF header, and if it sees it, it will clear the screen and display the GIF as it comes through the line. Presto, I've recreated the basic concept behind all of the systems mentioned above. In fact, I know of at least one such software gadget for my Mac that does just this, regardless of the terminal I use. Does this make it a graphical system? If it does, why spend time and money trying to standardize on a newer system when I can simply add GIF (arguably the only real de-facto standard for computer graphics) and be done with it?

Well one reason is that such a system would not be a GUI. There's a lot more to a GUI than pictures. Adding Harvard Graphics to your DOS machine doesn't turn it into Windows either. While the technical issues are important (NAPLPS can draw a screen faster than GIF for example) the real issue remains, I feel people want a GUI, not just graphics.

If all we want is graphics, we already have it. If we want a GUI, none of the systems above really help out. Even if all the technical issues were solved today and all terminal programs supported NAPLPS tomorrow, I think the problems would still persist. NAPLPS is an old system (the first major public article I know on the subject is in Feb '83 Byte) and would simply make your command line look a little nicer. BBS's based on NAPLPS would still be quite modal,

single window, and for all intents and purposes, a more colorful version of the PC-ANSI systems we have today.

With the acceptance (finally!) of GUI based operating systems, I see the marketplace for real GUI based BBS's becoming larger over the next few years, and the problems noted in Mr. Turner's letter will most likely get far worse before they get any better.

Maury Markowitz, SoftArc Inc.
maury@saolgate.softarc.com

Maury:

Overall I agree, it's just the facts and particulars of your letter I have to take exception to.

I suppose I did state that NAPLPS has the inside shot at a graphical interface for bulletin boards. Truth is, I haven't a clue. It could be NAPLPS, could be one of the other contenders, or it could be something else we haven't heard of yet. If I had to pick a winner right now, I would guess NAPLPS because it seems to be gaining a rabid band of followers. But I'm not wed to a particular solution, I'm just hoping someone does one.

All of the graphic solutions we have mentioned, and you mentioned in your letter, simply don't operate the way you apparently think they do. I'm a little disappointed in this in that we apparently have not done a good job at conveying what they do do. They are nothing like GIF images, although I'm not sure what's wrong with GIF images. And not to digress, but GIF is NOT the only de facto standard even for that type of bit-image graphics. I'm going to guess that the Joint Photographic Experts Group (JPEG) standard for bit-image graphics shows promise as a long term winner even there. GIF files are simply too large even with today's high-speed modems.

NAPLPS and RIP certainly wander far afield from your characterization of simple graphics display. Primarily in that they include provisions for mouse control, sound, and in the case of NAPLPS, animation. Further, NAPLPS contains provisions for DRCS table extensions for other (foreign) alphabets and looks like it will include JPEG bit

Boardwatch Magazine

ISSN:1054-2760
Volume VII, Issue 3
March, 1993
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images as well. Ultimately we do want the type of low overhead control structures embodied in what is usually termed a GUI, but we also want bit images incorporated seamlessly into that interface to show pictures of houses, cars, ourselves, what we're selling, what we're looking for, and more. A control interface without realistic graphics or realistic graphics without a control interface

are neither the solution. And ultimately, we want sound and motion in there as well.

We have tried to do an article on RIP for three issues in a row now and are still failing. The group(s) behind this are not terribly well defined at this point and the "final version" is always just around the corner. It is not quite as flexible as NAPLPS, but it does offer some fascinating features that I think are pretty novel. It will work with most BBS now and basically it allows a BBS to provide the terminal program with icons and buttons that are essentially communication "objects." The BBS can actually reprogram these objects from a distance. The caller clicks on them with a mouse and the "object" responds by transmitting some command string out the serial port. This can be a simple text command string usable by almost any BBS. And as I said, the BBS can "reprogram" the object to issue a DIFFERENT string the next time it is clicked at the caller end. Fairly detailed background graphics are possible with this system. I can tell you that RIP too is gaining a following and Galacticom, Searchlight, and Synchronet BBS packages are about to announce full RIP support. Telix, one of my personal favorites in the terminal program field, is probably going to announce support for RIP as well.

Both NAPLPS and RIP have quite interactive communications functions. I guess perhaps I don't fully understand your somewhat pedantic definition of GUI, but these two technologies have virtually nothing in common with transmitting GIF images - either in concept or execution. In fact, as they stand now, one of my primary criticisms is that they don't incorporate photo-realistic graphics adequately. I would nominate JPEG as the way to do this and it should be made part of both RIP and NAPLPS.

I would like to see a more graphical interface capable of hiding the many arcane technical detritus of our communications heritage become ubiquitous online. And I think that with regards to modem speeds, we are finally at a point where we can seriously discuss this for the first time. What it's ultimate initials are (GUI or not) is not particularly important. But some consensus is. And if

something more powerful does come along and develops a following, I would drop the NAPLPS theme like a hot rock.

Jack Rickard

Dear Jack:

Thank you very much for your wonderful response to Jim Dunmyer's letter in the November issue of Boardwatch. I have run a very successful BBS for a mere 6 months. By successful, I mean that the experience has been rewarding on a personal level, not on a financial level. Total contributions to the support of the board have amounted to less than the cost of a box of floppies! But I have made friends in such faraway places as Belgium and the UK, have experienced the trauma of a profound hard disk crash which, in one tragic gesture, wiped my entire slate clean. I have added my voice to the fray on FIDO, have opened the world of the Internet to my callers, and have watched in agony as abusive users, failing to hearken to my patient warning voice, finally felt the cyberaxe of sysop lockout.

Through all of it I troubled myself with questions of the deepest nature: do I have what it takes? Am I going to survive this mentally and emotionally intact? What of my marriage? Will my wife and kids someday pack whilst I am clickety clacking away in the den? Is that REALLY one month's phone bill?

You put it all in perspective for me Jack. I am a pioneer pushing a handcart through what can sometimes be considered dangerous and at least unfriendly digital frontiers. I follow in the footsteps of some of the greatest, and hope to help pave the way for those that follow. I may not be CompuServe, but dammit, I won't ever think of myself as small again!

Thank you Jack, for helping me put it all together. This is why I buy your magazine. Keep up the good work!

Tom Davidson
Osgiliath BBS
1:312/20
(801)374-9633

Tom:

There are many ways of measuring success. Currently, there is a lot of interest in running a BBS for profit, and we share what we know. But if money was required to drive all this, it never would have happened. Many, many BBS operators worked long and hard for the privilege of paying money INTO this hobby and they are rarely the ones taking money out of it. As Bob Mahoney, sysop of EXEC-PC and one of the small group that DOES actually operate a system quite profitably says, "It takes a more complex set of goals than making money to make money with a BBS."

There are many good reasons to run a BBS that don't have anything to do with money. As to expense, line up your phone and hardware bills with the hobby costs of any really serious bass fisherman, avid golfer, or sailing enthusiast, and then consider the profound changes likely to be wrought on our entire society by more bass fishing, golf, or sailing. BBS operators are really, to my way of thinking, the heroes of our age - the Thomas Paines and Ben Franklins of the 1990s.

That said, lighten up. Include the wife and kids in the online experience, and maybe take a night off once in awhile to take them to a movie. BBSs are, after all, mostly for fun. If you miss an evening at the fire hose of e-mail gushing through your RJ-11 jack, I promise you, it will still be there waiting for you a day later - in full flow. And some callers were just genetically designed for deletion.

And Jim Dunmyer has spent nearly ten years building his system. But every time I see him, and I do once every year or so, his wife is there with him. Given Jim's enthusiasm for bulletin boards, there IS talk in Toledo of petitioning the Catholic Church to canonize the woman I understand, but nonetheless, they do try to share the activities to the level of their mutual interest.

My point is, many of the pioneers, though they do sport more than a few arrows in their back, do hold home, hearth, and family together. Indeed, the drive to make a living from bulletin boards revolves around the dream of the home family business. I would urge you to consider

coming to the ONE BBSCON this August and meeting some of these people. It will put it much further in "perspective" just what it is you are doing alone in the den.

Jack Rickard

Dear Jack:

Thanks for publishing the letter from Arcady Khotin of St. Petersburg, Russia. Although I'm a charter member and avid user of America Online, the only time I've ever tried AOL's Internet Gateway feature was one instance when I sent a message to you. That was until I tried making contact with someone on the other side of the globe, Mr. Khotin in Russia.

Much to my great satisfaction and EXCITEMENT, the Internet address for Mr. Khotin published in your January, 1993 issue WORKED!! And darn quickly too. I've got to check the exact times more carefully, but I believe it was within 24 hours of transmitting through AOL's Gateway that, bingo, I had a very cordial response from Arcady.

My new Russian acquaintance asked a number of questions which I've already responded to and I look forward to a very interesting (to say the very least) pen-pal relationship with someone completely on the other side of this "global village."

Your magazine served as the catalyst for my new adventure in global communication. 'Course, I give myself credit for having the good sense to read Boardwatch regularly, even though I'm most definitely a "user" rather than an operator of a BBS. I've glanced at a couple of BBS type pubs but none of them make it interesting for "users" like Boardwatch does. Keep up the excellent, worthwhile and productive work!

Now, if I can only figure out what all those addresses mean that are listed under "headers" (on the transmission I received from St. Petersburg). Maybe you or some real Internet guru can translate that listing for me. Or maybe I can dig it out of the book I bought recently, at the suggestion of your magazine: "The

Whole Internet User's Guide & Catalog."

Another quick PS - I just love Bruce Sterling's book, *"The Hacker Crack-down, Law and Disorder on the Electronic Frontier."* I ripped the ad out of Boardwatch about a month ago and asked my wife to get it for me for Christmas. Which she did. I sent Mr. Sterling an e-mail note yesterday (he's also an AOL member) telling him how much I am enjoying it. Man! Between Sterling's new book and my exciting Internet contact in Russia - Santa Claus was super to one hopelessly addicted cybernut.

Sincerely,

Larry Gauper
onehorse@aol.com

Larry,

It does sound like the online bug has bitten pretty hard at AOL. But I am most pleased to hear from someone putting our modest efforts to good use. And after some 14 years online, I too never have quite gotten over it either.

I did see a fascinating documentary series on public television covering the civil war. One item caught my eye nearly every evening this show was on. As part of the documentary, they would read letters mailed home by some poor private on one side or another. These letters were drafted by rather modestly educated soldiers of agricultural background. And each was so powerfully and poetically written, I couldn't help but contrast them with the many hundreds of letters and memorandums I had rewritten during my "corporate" years for functionally illiterate company presidents, division, and department heads - all of whom sported graduate degrees in something or other but couldn't actually write themselves traveling directions home with any hope of ever getting there.

I also recall a letter from my grandfather, a railroad engineer and rancher, that I received while I was in the Navy. It was not only well written, but actually poetic - from a different age and time. Today, our current corps of professional NEA educators would perhaps go further in their never ending quest for pres-

tige, money, and power, if they bothered to teach the majority of students the basic rudiments of reading and writing. And the concept of powerfully, even poetic writing is completely and totally beyond the current debate. It is unthinkable. It is today rare in individuals. Yet we have forgotten that there was a time when much of our communication was by written letters and the ability to write with a "fine hand" was prized most universally and most thoroughly. Every mother in the land desired for her children enough education to deal with "letters" and we had reached enough success in this country through Horace Mann's public education system by the time of the civil war that common foot soldiers quite commonly possessed this skill of artfully communicating in writing. And not the writing of novels, newspaper articles, or business correspondence, but specifically the writing of letters of correspondence.

I have a tiny dream that of all the changes wrought by this increasingly global electronic mail medium, the one thing that will come out of it is a maturation beyond flame wars, to the point where the ability to write a good, moving, powerful, and persuasive letter - to write with a "fine hand" is again a prized skill sought and obtained by many. That with great convenience we can send correspondence to countries on the other side of the globe and have them there the next morning with a reply within 24 hours is indeed a remarkable technical feat. But it may be that the success of our children in dealing with a global economy may be measured by their ability to express themselves and communicate artfully by letters. And it may be that just establishing pen-pal relationships such as yours, dealing with the misunderstandings and foibles of communicating entirely by written correspondence, and in many cases communicating with people of differing linguistic and cultural backgrounds, might provide the impetus to a needed re-valuation of this skill. Dealings between nations are changed forever when individuals within those nations can easily and immediately communicate directly with each other - as you and Mr. Khotin are doing now. I would hope we all take the time and make the effort to learn to do it well...

Jack Rickard



Multiple User Friendly.

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employees, customers and suppliers. Versions currently available for Intel, SUN, IBM RS/6000, HP-UX, DEC Ultrix, AT&T 3B2, Sequent and Data General. Call for complete information, and access to our demo system via INTERNET or dial-up. For the best BBS software, hands-down.

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Dear Jack,

I was surprised when my December BOARDWATCH issue never arrived from the U.S. Snail-Mail. I waited and called your office. You were out and I left a message on your answering machine explaining the problem. The next business day there was a message from you on my answering machine.

I was shocked an Editor/Publisher would take the time to call back a subscriber, long distance no less. I was blown away a few days later when I got my missing issue direct from you with no hassles.

You are one hell of a Editor/Publisher to check on a small single subscriber's complaints. I run the NorthCoast Message Center BBS (216)961-1621 9600 v.32. It is one of the smallest BBS's in the 216 exchange. Yet the kind of service you provided made me feel as if my BBS was as big and as important as the Big Guys.

Thanks Jack, for taking care of the little guys too.

Sincerely,

David L. Bly
Sysop: NorthCoast Message Center BBS
Cleveland, Ohio

David:

*Boardwatch started as a little newsletter for a handful of friends. In the process of growing it up to a magazine with a readership of some 55,000 online enthusiasts, the process has gotten a little more complicated. I suppose if I was a better "editor/publisher" you wouldn't have missed your December issue in the first place. And if I was better at running a business, we wouldn't be in a more or less constant state of war with printers, mailing houses, the USPS, etc. etc. But I become very irritated when retailers, mail order firms, etc. appear to be taking advantage of me or have irksome procedures for accomplishing apparently simple tasks. When it appears that somehow we at **Boardwatch** are visiting these same sins on OUR customers, I do quite go into a rage, and while I don't recall your particular case, it was prob-*

ably one of those "I'm-quitting-to-go-write-a-rice-recipe-cook-book-and-leaving-you-all-with-this-ragged-little-magazine-if-you-don't-stop-screwing-these-people-over" tantrums I throw periodically here in the office that caused the apparent personal attention and efficiency. I'm afraid it isn't quite the normal operation. I simply can't call every subscriber on the phone given the current numbers of people involved. And the truth is, we're not doing very well at taking care of our readership these days. You just about have to beg for a renewal form as it stands today.

But the basic philosophy is as you perceive it. With the 60 pounds of mail hitting most people's mail boxes each week, it is a profound privilege to even be READ, much less supported by the community we serve. And while we do sometimes stumble in performance, we are cognizant of the responsibility to at least make sure everyone got what they ordered and paid for. As to your size, the truth is that I've got no way of predicting whether you will close your BBS and disappear online forever this spring, or wind up running the whole global network 10 months from now. It's that kind of a world online.

Jack Rickard

Dear Jack:

You can't imagine the range of emotions I felt when I recently opened a box "from the States" and found 100 cassette tapes from the ONE BBSCON.

Surprise - I thought, at best you might send a FEW TAPES. (I actually had given up hope of even that.)

Gratitude - I know it's not the same as "being there," but just listening to the dozen or so I've played already has given me priceless information I really, really needed. Your generosity and thoughtfulness has made me a Jack Rickard fan forever. I think a lifetime subscription to Boardwatch Magazine would be perfectly in order at this point...now if I can only find the financing. And to think I almost believed some of the terrible things they say about you!

Guilt - I AM the great procrastinator. I always meant to send these Belgian Chocolates, I just hadn't gotten around to it yet. Durn yer hide for beating me to the punch!

It is with great shame and gratitude that I offer this small token of my appreciation to you, your magazine, and whatever members of your staff/family prodded you into doing this. Please supply me with their names, and I'll see they get one (smaller, of course; after all, you're the whale boss) each.

Soon as I get around to it.

Or maybe I'll just wait until August and deliver them in person.

Nah...once you've tasted them (and passed them around, I hope) it would be far too sadistic to make you wait 'til August for more. Let me know how long it takes you to inhale these, and I'll try to set up a regular CARE package (within reason, of course).

You WILL see me in August, I swear it! Nothing (well almost) will stand in the way THIS year! Part of the problem is you keep wrapping this thing around my wife's birthday, 8/28. In the meantime, hope you and the family had a nice Christmas and that you all have a GREAT new year.

Thanks again Jack, enjoy!

Ted Fletcher
Brussels, Belgium

PS. I log on to the board at least once a month, so you can leave the list of names there. Even if I hand carry them, I need to know whose name to put on the box!

Dear Ted:

The best present you can bring our way is to come to the ONE BBSCON this August with tales of the BBS world as it stands in Belgium. Bring photos - BBS lists, and tales of the online. But Peg Coniglio, our ONE, Inc. staffer, is the one who actually made audio tapes show up on your doorstep.

For those unfamiliar with the situation, Ted is a noted BBS operator in Belgium

YO, SYSOP! CAN WE
TALK VOICE HERE?
YOU NEED MORE LINES...
YOU NEED FALKEN!



I KNOW, THERE'S A LOT OF
BBSWARE OUT THERE! SO...

What's the FALKEN Difference?

Low Startup & Low Expansion Cost

With over six years of development and operation, **Falken** is a full-featured multi-user BBS. **Falken**'s low start-up cost and low expansion cost allows your system to grow profitably.

Falken supports any combination of standard serial ports, modems and multiport serial cards. This is possible because, unlike many multi-user BBS applications, **Falken** doesn't require dedicated IRQs for each internal modem or serial port.

Using our integrated multitasking environment, **C-Switch**, **Falken** breaks the 640K barrier. Streamlined for multi-user applications and optimized for serial I/O, **C-Switch** uses expanded memory so that **Falken** will even operate on XT-class PCs.

Configuration is easy and painless. You can customize **Falken**'s menus to your personal preferences. You can create menus and screens for both ANSI and ASCII callers.

Our Open Doors Policy

External applications - such as multi-user games, databases and new file transfer protocols - can be easily integrated with **Falken** as Doors. **Falken** is the first and only multi-user BBS to support Doors.

Several applications are already available, such as *Warlords*, *Net Poker*, *On-line Shopping Mall*, *Chess*, *Opinion Poll*, various *Adventure games*, *Trivia* and *FalkeNet*. Many more will soon be released.

Multi-caller Chat

Join public teleconferences or create private ones. No flipping through channels on **Falken**.

Dozens of commands are available in teleconference.

Features

- **Email** supports distribution lists. Send Email to members of a workgroup or SIG. You can also attach a binary file to Email.
- **Message Base** uses threaded responses.
- **Several File Transfer protocols** including XModem, YModem and ZModem.
- **Sysops can dial-out** while **Falken** is on-line supporting other users.
- **Link teleconferences** with other **Falken** systems to create SUPER-teleconferences.
- **Utilities included** to automate maintenance, billing, monitoring and other functions.

Price List

2-Line Falken BBS	\$99
4-Line Falken BBS	\$199
8-Line Falken BBS	\$299
16-Line Falken BBS	\$399
24-Line Falken BBS	\$449
32-Line Falken BBS	\$499

Falken Test Drive

A 2-line version of **Falken** is available as shareware. You can download it from our **Support BBS at 703-803-8000** or call voice at 703-491-5823 for more information.



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Woodbridge VA 22193

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who had paid a full registration for ONE BBSCON this LAST August and due to circumstances beyond his control, was unable to make the trip to the U.S. to actually attend the event. Rather than refund his registration, we sent him the full set of over 100 audio tapes of sessions held at the ONE BBSCON. His letter was accompanied by an astoundingly delicious box of Belgian Chocolates.

Jack Rickard

TELEBITS

CORRECTIONS

In our February issue, we mentioned a Canadian company titled Merlin Systems that were working on a software gateway to link PCBoard BBS to the Internet via UUCP. We incorrectly listed their telephone number as (613)236-1136. Correct contact information for Merlin Systems is:

Roy Pereira
Merlin Systems
PO Box 3043, Station C
Ottawa, Ontario K1Y 4J3 Canada
(613)236-1138 voice
(613)236-1481 fax/BBS
Internet: info@merlin-systems.on.ca

Similarly, in our story on Dave Hughes trip to Russia, we listed Andrey Sebrant's Internet address as asebrant@glas.apc. The correct address is asebrant@glas.apc.org.

RUMORS

The move to an online graphics standard may be picking up steam. The big rumor of the month.... a PROMINENT PROFESSIONAL COMMUNICATIONS terminal software developer located deep in the heart of Missouri's corn country is rumored to be setting up a secret "summit meeting" of BBS software developers for sometime in February. They're actually bringing in these developers to discuss ONLINE GRAPHICS PROTOCOLS AND STANDARDIZATION. If they reach consensus on a protocol, this group is influential enough that what they decide is pretty much what we will

see on future online screens. Meanwhile, Galacticomm, Synchronet, Searchlight Software, and Telix are all rumored to be making announcements regarding the RIP graphics program.

Few online may realize it, but U.S. modem manufacturers are a bit hampered in that modems featuring speeds above 9600 bps are still actually under technology export controls. A move is afoot in the U.S. Department of Commerce to lift this restriction. One of the reasons cited is ZyXEL USA. ZyXEL's U-1496 modem is actually manufactured in Taiwan, doesn't use either the Rockwell or AT&T chip set, and their modems actually do 16.8kbps connections with 19.2kbps capability within days of availability. If high speed modems are already available overseas from other manufacturers, then why are we shackling our own, or so the reasoning goes....

Electronic Democracy? The full U.S. House of Representatives, or all those that desire to, will have access to the Internet by April or so we hear.

And on the REALLY bizarre and exciting rumor front...wouldn't it be a very strange thing indeed if an alternate "internet" for bulletin boards was developed across the U.S. to backbone all FidoNet, RIME, ILINK, etc. mail for all the BBS networks now in operation? Offering full Internet Protocol connections to those BBS that wanted them at a fairly realistic cost? It ain't there yet, but we can tell you there are some very interesting people working on something along those lines...even...as...we...speak. Sounds like a real live garden party....

AT&T INTROS SYSOP DEAL ON 14.4kbps MODEMS

While the majority of modems currently offered on the market use the Rockwell Chipset, AT&T Paradyne develops their own modem chip sets and they have historically been good ones. The Telebit Trailblazer we reviewed last year used an AT&T chip set and it serves flawlessly at the 9600 bps speed it was designed for.

But AT&T Paradyne also makes modems - historically somewhat pricey modems for the corporate market. Recently, they've apparently had a change of heart with a line of modems titled the **DataPort Family** available at more reasonable pricing. And since AT&T Paradyne modems are virtually unknown in the BBS community, we were surprised to find they have introduced one of the most usable sysop modem discount deals we've ever seen - as their first effort. And more to the point, they're touting one of the best prices for a quality modem we've seen as well.

Their **DataPort 14.4/Fax Modem** leads the line with a list price of **\$555** featuring 14,400 bps V.32bis data rates with V.42bis/MNP 5 error correction/compression features. This has become pretty standard online. The modem does support fax transmission at up to 9600 bps as well. Their claim as the most compatible modem available is hard to prove or disprove. But we connected to a wide variety of modems without incident or failure and it appears to be one of the most reliable units we've tested. It also features an unusual **LIFETIME** warranty and toll free support - with people on the other end.

One thing we confess to knowing a bit more about than we quite understand is termed **Optical Phone Line Interface (OLI)**. This looks like a way of decoupling the modem electrically from the telephone line and appears to allow the modem to operate at high speeds on poor lines. In any event, it also seems to work. We were routinely getting full 14.4 connections on long distance calls to boards we can rarely raise at anything higher than 12000 bps.

The modem case is attractively designed and relatively small. The motherboard inside could be sampled in circuit board design classes - an unusually low component count and superb workmanship throughout. The modem runs quite cool at **5.7 watts**.

The BBS sysop discount program is available to all bulletin boards, hobby or commercial, that have been in operation for at least six months and intend to be in operation for at least another six months. They do verify the bulletin

boards by calling them, but claim to ship within 3-4 weeks. They conveniently accept money orders, MasterCard, Visa, and American Express in payment. Like most BBS discount programs, this one is designed to advertise the AT&T Paradyne modem and BBS operators are required to note during the logon process the use of AT&T Paradyne modems on the system. Operators may order as many modems as they have actual lines running on the system.

Three models are offered under the program.

DATAPORT 14.4/FAX EXTERNAL.

Model 3710-A1-201. This modem sports a list price of **\$555** and a BBS operator discounted price of **\$222**.

DATAPORT 14.4/FAX INTERNAL.

Model 3721-B1-001. An internal model offering the same features as the external V.32bis model. List price of **\$505** is discounted for BBS operators to **\$202**.

DATAPORT 14.4 EXTERNAL. Model 3710-A1-211. This modem is the same as the 14.4kbps V.32bis external model, but without fax capability. It features a list price of **\$515** discounted for BBS operators to **\$206**.

Since most multiline BBSs will have little use for fax capability on every line, this means AT&T Paradyne, one of the most respected modem manufacturers in the industry, is also the current BBS discount price king in the V.32bis class at **\$206** - a very unusual situation. And after playing with this modem for a week, we have to rate it as one of the best bargains currently available for BBS operators.

The modems come with **QuickLink II** communications and fax software for both DOS and Windows. A Macintosh version should be available soon.

We normally have a terrible time dealing with, or even getting information from corporations the size of AT&T. Surprisingly, AT&T has a PEOPLE running their BBS sysop discount program. His name is **Scott Frazee** and we were pleasantly surprised to find he speaks almost exactly the same dialect of American English we learned early in



AT&T Paradyne DataPort 14.4/FAX Modem

life. This immediately put us on common ground. According to Frazee, AT&T thinks they have a superb modem, and absolutely no visibility in the BBS market. They're hopeful that their BBS operator discount program can turn that around and establish a presence in the BBS community. We think they're speaking the right language - in this case a combination of **decimal** (\$206) and **V.32bis**. They have a BBS in beta test and should be announcing the number soon.

For more information, contact Scott Frazee, AT&T Paradyne, Mailstop LG219, 8545 126th Ave North, Largo, FL 34649; (800)554-4996 voice; (813)530-8276 international; (813)530-2398 fax; Internet: s.frazee@pdn.is.paradyne.com

HAYES AND MULTI-TECH BURY LEGAL HATCHET

Modem manufacturers Hayes Microcomputer Products, Inc., of Norcross, Georgia, and Multi-Tech Systems, Inc.,

of Mounds View, Minnesota, announced the end of a four year-old legal battle this past January 11.

The battle began in November 1988 with a letter from Hayes Microcomputer Products demanding royalties for use of the "improved escape sequence" Hayes had received a patent for on October 25, 1985 as U.S. Patent Number 4,549,302. Commonly referred to as the Heatherington 302 patent, it incorporated an escape sequence developed by Dale Heatherington that used a guard time in conjunction with escape commands to cause the modem to escape into "command mode" allowing callers to send commands to the modem. It decreased the incidence of modems "accidentally" escaping when they encountered similar strings in data that was being transferred. The technology was actually developed in 1981 and by the time the patent was issued in 1985, virtually all modem manufacturers used this escape sequence technique.

Rather than pay royalties, Multi-Tech

BBS MODEM DISCOUNT PROGRAMS

VENDOR	MODEL	LIST	SYSOP	BBS	VOICE	FAX
AT&T Paradyne	Dataport 14.4FAX	\$555	\$222	No BBS	813-530-2000	813-530-2398
AT&T Paradyne	Dataport 14.4	\$515	\$206	No BBS	813-530-2000	813-530-2398
ATI Technologies	9600 ETC-E	\$499	\$275	416-756-4591	416-756-0718	416-756-0720
Cardinal Technologies	9600V42 V.32	\$699	\$269	717-293-3074	717-293-3000	No Fax
Computer Peripherals	Viva 9624e V.32	\$349	\$249	805-499-9646	805-499-5751	805-498-8306
Digicom Systems	ScoutPlus V.32bis	\$389	\$210	508-262-1412	408-262-1277	408-262-1390
Digicom Systems	Scout V.32	\$299	\$195	508-262-1412	408-262-1277	408-262-1390
Galaxy Networks	UFO V.32bis	\$999	\$299	No BBS	818-998-7851	818-998-1758
GVC Technologies	FM-9696/144V V.32bis	\$689	\$413	201-579-2380	201-579-3630	201-579-2702
GVC Technologies	SM-96V V.32	\$599	\$329	201-579-2380	201-579-3630	201-579-2702
Hayes Microcomputer	Ultra 144 V.32bis	\$999	\$499	404-446-6336	404-840-9200	404-449-0087
Hayes Microcomputer	Optima 144+Fax	\$519	\$299	404-446-6336	404-840-9200	404-449-0087
Hayes Microcomputer	ISDN System Adapter	\$1199	\$650	404-446-6336	404-840-9200	404-449-0087
Image Communications	Twincomm 9600 V.32	\$299	\$279	No BBS	201-935-8880	201-935-6548
Intel Corporation	14.4EX V.32bis	\$549	\$269	503-645-6275	503-629-7000	503-228-9707
Intel Corporation	9600EX V.32	\$599	\$299	503-645-6275	503-629-7000	503-228-9707
Multi-Tech Systems	MT932BA V.32	\$869	\$435	612-785-9875	612-785-3500	612-785-9874
Multi-Tech Systems	MT1432BA V.32bis	\$899	\$450	612-785-9875	612-785-3500	612-785-9874
Practical Peripherals	PM14400FXSA V.32bis	\$549	\$250	805-496-4445	805-497-4774	805-374-7202
Quadralink Technologies	1496V+	\$360	\$320	416-538-9999	416-538-0101	416-538-1355
QuickComm	Sprit II V.32bis	\$249	\$220	408-956-1358	408-956-8236	408-956-1345
Supra Corporation	SupraFAX V.32bis	\$399	\$249	503-967-2444	503-967-2400	503-967-2401
Supra Corporation	SupraFAX V.32	\$299	\$199	503-967-2444	503-967-2400	503-967-2401
Teletbit Corporation	T3000 V.32bis	\$949	\$399	No BBS	408-734-4333	408-734-3333
U.S. Robotics	Courier DS V.32bis/Fax	\$1295	\$449	708-982-5092	708-982-5010	708-982-0823
U.S. Robotics	Courier V.32bis/Fax	\$695	\$299	708-982-5092	708-982-5010	708-982-0823
U.S. Robotics	Courier HST V.32bis/Fax	\$995	\$349	708-982-5092	708-982-5010	708-982-0823
Ven-Tel	EC96 V.32	\$699	\$439	408-922-0988	408-436-7400	408-436-7451
ZyXEL	U-1496 +V.32bis	\$989	\$549	714-693-0762	714-693-0804	714-693-0705
ZyXEL	U-1496E+V.32bis	\$649	\$399	714-693-0762	714-693-0804	714-693-0705
ZyXEL	U-1496E V.32bis	\$469	\$299	714-693-0762	714-693-0804	714-693-0705

filed suit in December 1988 seeking to have the patent ruled invalid. In February 1989, Hayes filed a counter suit charging infringement of the patent. In December of 1990, Multi-Tech filed additional claims charging false advertising and unfair competition. And so the battle raged. The most recent battles have centered on Hayes advertisements calling into question the Time Independent Escape Sequence (TIES) that Multi-Tech had subsequently adopted.

Just two weeks earlier, Hayes won a resounding victory when a United States Court of Appeals for the Federal Circuit in Washington denied a request by three California-based modem manufacturers

to overturn the results of a San Francisco court jury trial that found the Hayes patent valid. With the San Francisco case decided just two weeks prior to their own court date, Multi-Tech finally agreed to settle the dispute. The out of court settlement between Multi-Tech and Hayes did involve payment to Hayes of an undisclosed amount of cash, and Hayes agreed to make some changes to their "white paper" with respect to the TIES escape sequence. All other terms of the settlement remain confidential.

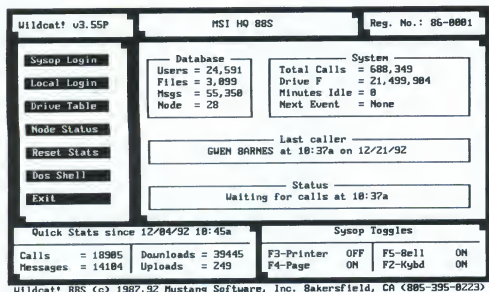
But the legal imbroglio, now settled between Multi-Tech and Hayes, still continues on other fronts. Hayes has pending litigation against Cardinal Tech-

nologies, Inc. of Lancaster, Pennsylvania, and Zoom Telephonics, of Boston Massachusetts. These cases are scheduled for U.S. District Court in Atlanta Georgia for later this year. But with the precedent set in San Francisco, it is unlikely either will come to trial.

Multi-Tech reported sales of \$81 million for 1992 and has been in the business since 1970. Multi-Tech Systems, Inc. 2205 Woodale Drive, Mounds View, MN 55112; (612)785-3500 voice; (612)785-9874 fax. Hayes Microcomputer Products, Inc., 5835 Peachtree Corners East, Norcross, GA 30092; (404)840-9200 voice; (404)441-1213 fax; (404)446-6336 BBS

WILDCAT! BBS

Wildcat! leads the pack when it comes to features, performance and innovation. MSI was the first to include offline mail reading software in a BBS package, the first with MHS support, and is the only company to offer NetWare bindery access and a multiline product that runs eight lines with separate DOS sessions on a single PC. There's a Wildcat! version for just about any application from a single-line neighborhood BBS to a wide-area network system.



Check out these features!

- XMODEM, YMODEM, ZMODEM, YMODEM-G, 1K-XMODEM-G and KERMIT.
- Multi-line operation of 250 nodes, up to eight on one PC.
- DOORS
- 1,000 message conferences, file areas and security levels.
- Full-screen message editor with quoting.
- File attachments to messages.
- Text can be uploaded into a message.
- File marking while viewing for later download.
- Operates with virus checking software.
- Full sysop maintenance when system is taking calls.
- 1,000 configurable events per node.
- Relational links between the message area, file area, and user databases, allowing the sysop to access related records.
- Enhanced support for CD-ROM files and changers.

We have the best value in BBS software. You don't have to buy an add-on mail door or add a program to make it do simple Zmodem downloads! The popular remote control program DOORWAY is even included FREE with the IM version of WILDCAT! You not only get the most for your money when you make your initial purchase, but you get full credit for your software investment when you upgrade it to support extra lines. We appreciate our customers.

Check out these prices!

The Wildcat! Single Line release supports one incoming phone line on a single PC or network workstation. It also lets you run your BBS in the background under DESQview! **\$129.00**

A great entry-level BBS or office system, **Wildcat! Multiline** handles 1-10 incoming lines. It can operate on a LAN where all ten lines can be dial-in or local access. Installed on a single PC under DESQview, Wildcat Multiline is able to handle up to four incoming lines plus local access. **\$249.00**

The Professional Multiline release supports 1-250 incoming lines or local LAN connections, and has all the same features of the other systems, including DESQview support. **\$499.00**

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Redefining Telecommunications in '93

PRODIGY SENDS MAIL TO SOMALIA - BUT ELIMINATES 250 EMPLOYEES

Prodigy Services Company has been busy lately. Early in January, the service announced that it had reached the **2 million** account milestone with over a million households online and was currently enjoying over **700,000** connects per day. In further statistics, the service *claims* some **2.5 million monthly electronic mail messages** and over **150,000 BBS messages per day**. The service recently expanded the number of BBS topic areas to over **400**.

Prodigy recently added an interesting service. Callers can now track the voyage of *Great American II*, a trimaran sailing ship that's attempting to better the sailing speed record from San Francisco to Boston set by the clipper ship *Northern Light* in 1853. Satellite and telephone uplinks permit members to ask questions of the crew throughout the voyage and receive answers. *Great American II's* log will be available online.

The service also plans online question and answers with Rick Berman, producer of *Star Trek* and *Deep Space Nine*, and will soon add Patrick Stewart, who plays Captain Jean-Luc Picard on *Star Trek: The Next Generation*.

Most interestingly, the service has added a connection allowing people with relatives and friends serving in the U.S. Armed Forces in Somalia to send e-mail messages to them free of charge. Prodigy prints out the messages and the Armed Forces Mail System actually makes delivery - usually within 48 hours. Titled **USA CONNECT**, the service will be free and run until February 28. But even better, you don't have to have an account on Prodigy to use the service. The company has entered into an alliance with the **Software Etc.** store chain that will make terminals available in some **260** mall stores across the country where anyone can enter a message. Those interested are asked to call **(800)328-4646** to find the location of the Software Etc. store closest to them. Letters must be addressed to a specific individual.

Prodigy helped deliver over **200,000** messages during the **Operation Desert Storm** two years ago.

But even Prodigy is starting to catch on to the fact that implementing new features and competing in today's online world can be difficult through layers of bureaucracy. On January 11 they announced a major reorganization that included the elimination of **25%** of their work force - some **250** positions.

According to Prodigy President Ross Glatzer, "What we've done today is make the company leaner and more agile, and focused its resources on identifying and responding rapidly to the changing needs of our members. We expect to continue to lead the online marketplace. These reductions were painful but necessary in order to reduce our costs and operate more efficiently," Mr. Glatzer said. "We're doing everything feasible to ease the impact of the reductions on those who are leaving and those who remain."

One of the ways Prodigy is reducing overhead is by outsourcing all membership services to SPS Payment Systems Inc. Approximately 65 Prodigy employees are being offered positions at SPS Payment Systems.

The company still plans on introducing an electronic mail gateway to the Internet before the end of the first quarter of 1993 - allowing Prodigy members to correspond worldwide with the rest of the online community. Additionally, the company is developing more powerful user software for drafting messages offline, and is experimenting in a number of areas including delivery by cable television, wireless e-mail, and other products.

BOARDWATCH 100 READER'S CHOICE BBS CONTEST UPDATE

This year's *Boardwatch 100 Reader's Choice BBS Contest* got off to quite a start on opening day, **January 1, 1993**. BBS enthusiasts from around the country immediately flooded our fax machine, BBS, and mailbox with ballots for their favorite bulletin board system. As of the close of the first week of balloting,

we have received and processed some **764** ballots and already some interesting items are starting to appear.

First, the breakdown by sex indicated **673 male** voters and some **91 female** voters with none confused. This **86.5% male to 13.5% female** ratio of online participants is almost **PRECISELY** what the final breakdown was over the course of last years **11,152** total contest votes. It would appear we are on **VERY** firm ground estimated female online participation at around **13-14%**.

The average age of voters was again so far this year right at **34** years of age. The breakdown to date:

AGE	VOTES
0-9	14
10-19	184
20-29	186
30-39	199
40-49	192
50-59	60
60-69	24
over 70	5

We asked a couple of new questions this year. One was "*Have you installed a second telephone line for modem use*". A total of **299** said yes, **462** said no, and **3** asked what a telephone line was. This indicates that **39%** of BBS aficionados have installed second telephone lines specifically for data communication purposes. The telephone companies are all quite thrilled with this statistic.

We also were curious where the **Microsoft Windows** program stood with the online crowd. Windows programs and utilities have become very common in BBS shareware libraries. Some **417** of **764** votes cast indicated some regular Windows use while **345** don't do windows. Two respondents asked what a window was. Windows penetration among the online crowd would seem to be about **55%**. Although I do quite a bit of Windows myself, I found this surprisingly high for some reason. For those who pooh-pooh dollar Bill and the group in Redmond, note which way the window is blowing here.

Modems used by callers - pretty early to tell but U.S. Robotics still looks like a favorite online.

MODEM	VOTES
U.S. Robotics	140
Hayes	69
Supra	44
Zoom	42
Practical Perph	37
Intel	24
Cardinal	24
Boca	22
Comp Periph	16
Best Data	16
Everex	13
ZyXEL	11
Packard Bell	10
Multi-Tech	10
88 others	286

With regards to terminal communications software packages, **Procomm** retains an overpowering lead with **266** of **764** votes or **34.82%** of the market. But **Qmodem** seems to have overtaken **Telix** by the narrowest of margins for the number two spot at this stage with **152** callers for a **19.90%** share while **Telix** took third position at **150** callers for **19.63%**. Last year, Telix had a firm hold on the number two position but Qmodem seems to be overtaking it. A newcomer that is gaining attention is Winfred Hu's **TELEMATE** program with 38 callers making all ten digits count with this program for a **4.97%** share. Though callers have specified over **70** different comm packages already, these four programs account for **79.32%** of the market.

As it stands now, six lucky voters will receive modems in this year's contest although several other modem manufacturers have expressed preliminary interest. **ZyXEL USA** has donated two top of the line **U-1496** models featuring fax and their highest data speed - likely **19,200 bps** by the award ceremony at the **ONE BBSCON** in Colorado Springs, August 25-29th, 1993. Likewise, **Hayes Microcomputer Products, Inc.** has weighed in with support consisting of two **Hayes Optima 14.4** modems with Fax, and **U.S. Robotics**, long a favorite

in the BBS community, has pledged two U.S. Robotics **Courier Dual Standard** modems. Six qualified ballots (qualified by being completely filled out and received **1 January 1993 to 23:59:59 June 30, 1993**) will be drawn at random by representatives of these three companies at **ONE BBSCON** to determine the winners. A similar drawing last year produced some surprised but happy dialers in the BBS community.

Additionally, the BBSs themselves are vying for the top spot, in many cases by offering their callers incentives such as modems, software, extended time on their systems, etc. for voting. Several are running parallel contests. While they can't handle voter ballots in any manner after they are completed, several are asking voters to send them photocopies of the ballot the voter mailed directly to Boardwatch. These photocopies are being used as entries in the local contests. We have determined this is a valid technique for the purposes of this contest.

If the current pace of the contest continues, we project a total ballot count somewhere in the **20,000 to 30,000** vote range. The ballot is floating around on the bulletin boards in the file **CONTEST.ASC**. Callers can download this file, print it out and mail or fax it in, use the printed ballot in Boardwatch itself, or vote electronically on the **Boardwatch BBS** at **(303)973-4222**.

FILE COMPRESSION WARS REVISITED - PKWARE RELEASES VERSION 2.04c of PKZIP

Since the early days when the BBS community first began forming, one of the ongoing topics of discussion has been file compression/library programs. The reason is that this particular utility segment is central to the distribution of software programs by modem.

Most software programs for IBM compatible personal computers are made up of numerous files - documentation, help text, overlays, configuration files, etc. that all interact as a "program". Any software installation requires any number of files and some products come on as

many as a dozen diskettes required for installation.

In the BBS community, early efforts consisted of simple library routines to combine all the necessary files a particular program needed into a single file for storage and transport. In this way, callers could download a single file entity, and then extract all the original component files to install the software. Combining files into a single file entity made the process of transferring "programs" by modem a manageable task.

Given the slow 300 bps modem speeds of the day, a natural improvement to library management software was compression. Early compression software worked on the principle of replacing redundant strings of data with reduced symbols - a series of 30 space characters could, for example, be replaced with three or four bytes noting that the character was a space, and there were 30 of them.

One of the best early efforts was a program titled **ARC** - short for **ARCHIVE** - developed by **Thom Henderson** - an early participant in the International FidoNet. ARC handled both the library (archive) function and provided some pretty advanced data compression. Not only could programs be stored in a single file entity, but it was smaller as well - decreasing the storage space required for the program on the BBS, and at the same time decreasing the amount of connect time required to download the file.

ARC became a standard in the bulletin board community that was considered nearly unassailable. And a number of competing products sprang to life to deal with the ARC file format.

One of the most successful was a program written by a computer science graduate named **Phil Katz** in Wisconsin. Titled **PKARC** (Phil Katz ARC program) the program was fully compatible with existing ARC files, and also made ARC files much more quickly than the original ARC program. The program was so successful that Katz formed a small shareware company titled **PKWARE, Inc.** to promote it.

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Internet Telnet - Log into other Internet computers. For example, to play games or visit a super-computing BBS.

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Henderson asserted that PKARC contained original source code from the ARC program and filed suit alleging copyright infringement. He also claimed ownership of the **.ARC** file extension. The matter was settled out of court, largely to Henderson's advantage. But opinion in the BBS community ran against Henderson and he was perceived as competing in court rather than on performance issues.

In any event, Katz soon released a new version of his file compression program that used a different file format titled **PKZIP**. It not only used a different format, but a different file name extension - **.ZIP**.

Many in the BBS community point to the support Katz had politically as a result of the lawsuit as the reason **PKZIP** became the ascendant archive format. Actually, it had nothing to do with it. The reason **PKZIP** caught on was entirely technical. **PKZIP** made smaller archives than **ARC**. BBS operators across the country tested the new program and found that if they converted all their **ARC** files to **ZIP** files, they could gain tens of megabytes of additional hard drive space. It was as if someone had offered them free hard disk drives to convert. So they did.

The BBS community has never regained the situation of having a "standard" archive program since **ARC** was dethroned. A Japanese group released a free program titled **LHARC** that gained some popularity. More recently, a program titled **ARJ** has gained a following. But generally speaking, the vast majority of bulletin board files are stored as **.ZIP** files.

The last release of **PKZIP** was in March of 1990 and the **PKZ110.EXE** file is ubiquitous on BBS around the world. This is known as a self-extracting **.EXE** file in that it contains compressed component files, but you do not need a separate compression utility to extract them. Simply download **PKZ110.EXE** and run it and it will self-extract a series of documentation and utility programs that make up the **PKZIP** program. These files include **PKZIP.EXE**, used to create **ZIP** archives, and **PKUNZIP.EXE** used to unzip files downloaded from bulletin

boards. This allows you to use programs on bulletin boards stored in the **.ZIP** format.

Well, kind of...

In late 1991, **PKWARE** released an "alpha" version of **PKZIP** in the file **PKZ193A.EXE**. This new version caused some confusion in the BBS community as some users adopted it and began creating **ZIP** files, while others didn't since it was not an official release. The result was an incompatible mix of **.ZIP** files that brought many BBS operators to the point of exasperation. Bob Mahoney, operator of one of the nation's largest BBS systems, **EXEC-PC**, issued an open letter on his system this past December lambasting **PKWARE, Inc.** for having an alpha release out for over a year with no further activity.

This past December 28th, **PKWARE, Inc** finally released version **2.04c** of **PKZIP** in the file **PKZ204C.EXE**. The release has caused near hysteria in some quarters online.

Part of the problem is that the new version of **PKZIP** really IS a dramatic improvement in some ways. The program has abandoned one of its primary compression algorithms, known as "**imploding**" for a new one they call "**deflating**". It results in significantly smaller archives - at least **5%** smaller than the previous version.

But the program also offers some other attractive features. It will automatically detect and use **EMS** and **XMS** memory as well as free memory in upper memory blocks (**UMBs** - the area between 640KB and 1 MB of the first 1MB address space). It will also automatically detect and use 386/486 microprocessors in a 32-bit mode. The result is that the new deflating technique not only creates smaller archives, but it does so dramatically faster.

In a test compression of a subdirectory containing **62** mixed text, **.EXE**, and **.ZIP** files requiring **1,888,256** bytes of disk space, we found the **PKZIP Version 1.10** created a **ZIP** of the directory in a time of slightly over two minutes (**2:04**) with a **.ZIP** size of **790,629** bytes. The new version **2.04c** reduced the same

directory to **745,120** bytes. It not only created a **.ZIP** that was **45,509** bytes smaller, but it did it in **1:24** - a full **40** seconds faster on a 20MHz 80386 machine with 4MB of RAM.

On a test directory of **25** purely text files occupying **1,404,562** bytes, the results were similar. Old **ZIP**: **428,220** bytes in **1:17**. New **ZIP**: **399,217** bytes in **0:53**.

And on a test directory of **37 .EXE** files occupying **1,476,608** bytes the new zip again showed its colors. Old **ZIP**: **756,859** bytes in **1:21**. New **ZIP**: **722,243** bytes in **1:15**.

The new version also sports some significant new features - most notably the ability to create **.ZIP** files spanning several diskettes. In this way, **PKZIP** virtually becomes a backup utility. You can designate a subdirectory for backup, and **PKZIP** will compress the files and subdirectories intact over a series of diskettes. They can then be reconstituted - including the subdirectory structure - using **PKUNZIP**. This is not an entirely effective backup strategy. To recover, you must have **ALL** the diskettes originally written to, and they must be inserted in the proper order. If any are missing, partial data recovery is not feasible. Most backup utilities are enormously forgiving of damaged data. One demonstration we saw of a backup utility, the salesman actually punched a hole in the diskette with a paper punch and **STILL** recovered the data. **PKZIP** is not nearly so robust.

And all is not roses in **ZIPville**. In fact, the new release has caused chaos in the BBS community for a number of entirely separate, but critical reasons.

First is the issue of backwards compatibility. The new **PKZIP** **WILL** unzip files created with earlier versions. But it cannot **CREATE** files in the old format at all. The convention in the past in such utilities is that some command line switch is provided to make old format files, while the default is the new "improved" file format. The new version of **PKZIP** ignores this convention entirely - largely because they have abandoned the earlier **IMPLoding** compression method entirely in favor of the new **DEFLATING** method.

The reason this is important has to do with other software widely in use in the BBS community. PKWARE has made programming libraries available for sometime allowing programmers to incorporate PKZIP into their own programs. Most of the BBS community has become enamored of the offline mail concept and offline mail .QWK packets are almost always ZIPped. And while many offline mail readers shell out to a copy of PKZIP itself for these duties, others have them built in internally.

The situation is worse for the mail door programs themselves that run on bulletin boards. If they can recognize and unpack only version 1.10 .ZIP files uploaded by callers, they will not be able to handle the new version 2.04c packets many callers will inevitably try to upload.

Sparky Herring's QMAIL door, for example, actually uses PKZIP and PKUNZIP to process packets. But QMAIL uses quite a bit of memory, and early test revealed some significant problems with the new .ZIP. When it works at all, it tends to create corrupted .QWK packets with CRC errors. And due to an apparent conflict with QEMM, the new PKZIP apparently causes some computers to simply reboot in mid-process.

Similarly, eSoft, Inc. had just finally released a .QWK mail program for their TBBS product this past November. And in January, TBBS operators face the growing possibility of having to explain to their callers why they can NOT upload .QWK packets created with the new PKZIP version 2.04c.

To add to the mounting confusion over the new release, it turns out that **Norton's Anti-Virus** program falsely detects a **Maltese Amoeba** virus in the new **PKZ204C.EXE** component files themselves. Thousands of callers across the country are calling BBS operators in a fury, accusing them of carrying a virus-infested program. In truth, the PKZ release contains **NO** virus we can find at all, and a new version of Norton's Anti-Virus program should fix the false alarm. But this does nothing to alleviate the confusion and the thousands of telephone calls to BBS operators. There are also many reports of unex-

plained corrupted files and CRC errors reaching near hysteric proportions online. And some complaints from owners of Northgate and Gateway computers about reboots etc. garnered responses from PKWARE representatives that the individual should replace their computer. This would appear to be the **WRONG** answer from the reaction it received.

The result could just be a period of chaos until the other software developers can bring their products in line with the new format, and PKWARE, Inc. gets some of the bugs worked out of the new release. On the other hand, if the confusion gets bad enough, developers and proponents of programs such as ARJ, LHARC, and other contenders are ready to pitch their compression utilities as the way to sanity. We could enter a new period of "compression wars" that will endlessly complicate life in the BBS lane.

The initial reaction of some of the major BBS operators is that the headaches aren't worth the space. Major systems such as Andy Keeves **Executive Network** in New York, Kevin Behrens **Aquila BBS** in Chicago, and others seem to have taken the position that **PKZ110.EXE** is good enough until the bugs get fixed. It's starting to look like the ultimate impact of **PKZ204C.EXE** may be deafening indifference married to a small dose of frustrating confusion. In general, it appears the boards will use the new 2.04c to **UNZIP** but the previous 1.10 version to **ZIP** files.



PKZIP Author Phil Katz and Mother Hildegard

For those willing to wage the battle, there is a bit of help. Norton has released a "fix" for their Anti-Virus program that modifies the .DEF file to prevent it from inaccurately reporting the Maltese Amoeba virus in **PKZ204C.EXE**. It is widely available in the file, **20A10.ZIP**. Quarterdeck has released a new DPMI for **QEMM386** that eliminates some problems, in the file **QDPMI101.ZIP**. And there is a conversion program that will help you do a mass conversion to the new .ZIP files titled **ZZAP66A.ZIP**. Two hot alternatives these days include **ARJ (ARJ239B.EXE)** and **SQUEEZE (SQZ1082E.EXE)**.

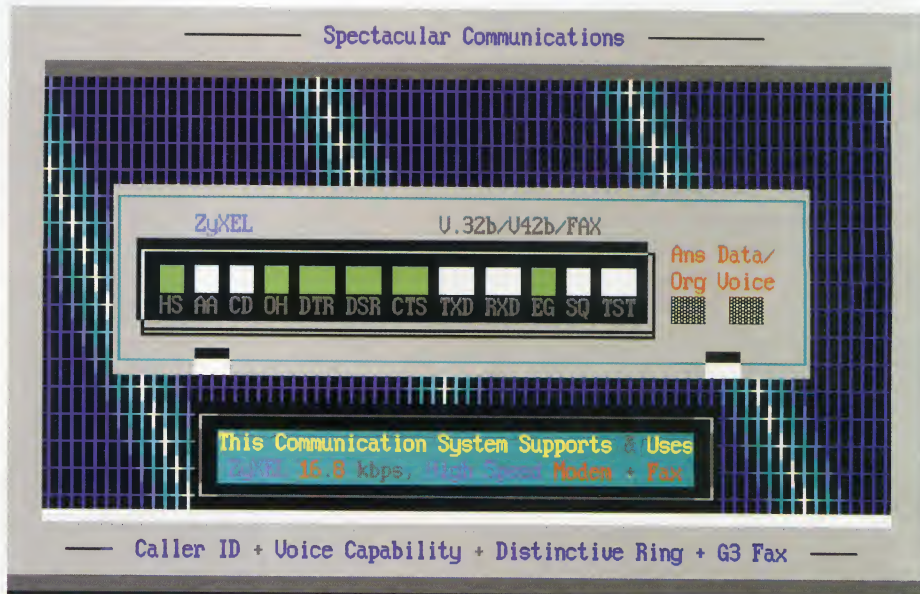
PKWare, Inc., 9025 N. Deerwood Drive, Brown Deer, WI 53223; (414)354-8699 voice; (414)354-8599 fax. CompuServe users can access the PKWare support area by entering **GOPKWARE**. Internet users can reach PKWare at **pkware.inc@mixcom.com**. Callers can download the shareware version of **PKZ204C.EXE** directly from the PKWare support BBS at (414)354-8670.

ZYXEL USA NAMES WINNERS IN BBS CONTEST

ZyXEL USA, a leading supplier of high-speed data/fax modems and compatible products, announced the winners of its first ever Bulletin Board System (BBS) ANSI Screen contest.

The contest was held to increase awareness of the ZyXEL fax/modems among BBS system operators. Entrants were required to submit color ANSI log-on screens noting the systems use of ZyXEL modems. The winning entry was submitted by **David Foy** of Santee, California. Foy operates the **Foy's Trading Post BBS** at (619)562-3438 using RoboBoard BBS Software (FidoNet 1:202/1301). Foy's winning screen consisted of a ZyXEL modem inside a window frame surrounded by a fishnet background. Foy spent two months and created more than 70 ANSI files in the generation of an image. Foy's BBS provides callers with on-line games, graphics, and an international message board.

Foy was awarded a check for **\$2500** and ZyXEL's **U-1496** top-of-the-line, high-speed fax/modem bundled with ZFAX and WinFax software. Second prize, consisting of **\$1500** and a ZyXEL **U-1496E** fax/modem, was awarded to **Bernal**



Foy's Winning ANSI Screen for ZyXEL Modems

Schooley from Aurora, Illinois. Ten runners-up were also selected and received a U-1496E modem.

According to Alan Bryant, director of marketing for Denver-based eSoft Inc. and one of three judges for the contest, the judging panel looked for originality and creativity. "We were looking for that "wow" factor. Foy's use of color and in-

teresting background bowled us over." ZyXEL is committed to the BBS market - offering a discount on modems to BBS operators and was the first to offer BBS operators modems capable of receiving fax and data on a single telephone line. "Our modem's high-speed and standard features provide BBS system operators with a greatly reduced phone bill and assures them of reliability as well as compatibility with all makes of modems," said Munira Brooks, marketing manager for ZyXEL USA.

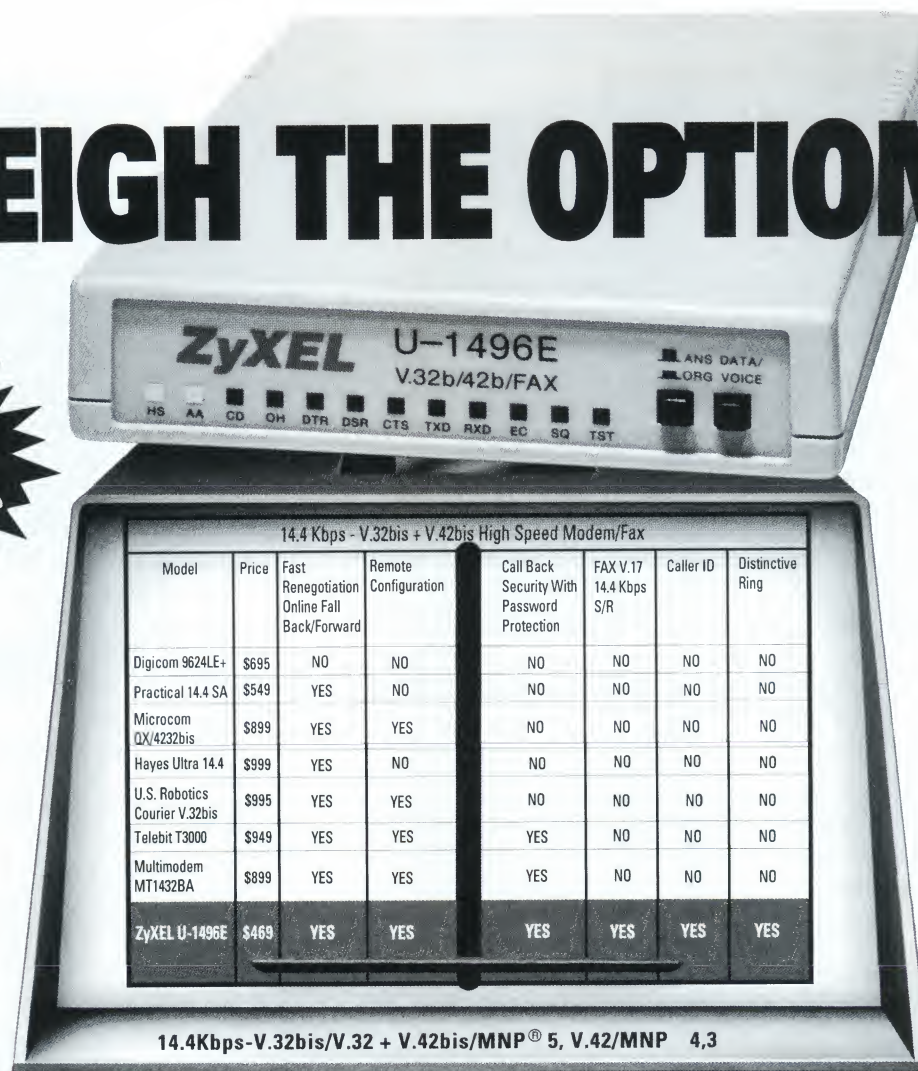
ZyXEL's U and U-plus series of modems come with an array of standard features that include caller ID, voice mail, distinctive ringing, and remote configuration. The U-plus series runs at speeds up to 19.2kpbs. Winning entries in the contest can be viewed by calling ZyXEL's support BBS at (714)693-0762 and downloading the file **WINNING.ZIP**. ZyXEL is also one of the sponsors of the **Boardwatch 100 Reader's Choice BBS Contest** - providing two of their **U-1496** modems as prizes to be drawn at ONE BBSCON, August 25-29 in Colorado Springs Colorado. Two contest ballots will be drawn from the votes received for ZyXEL modems. ZyXEL USA, 4920 E. La Palma Ave., Anaheim, CA 92807; (714)693-0808 voice; (714)693-0705 fax; (714)693-0762 BBS.



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Digicom 9624LE+	\$695	NO	NO	NO	NO	NO	NO
Practical 14.4 SA	\$549	YES	NO	NO	NO	NO	NO
Microcom QX/4232bis	\$899	YES	YES	NO	NO	NO	NO
Hayes Ultra 14.4	\$999	YES	NO	NO	NO	NO	NO
U.S. Robotics Courier V.32bis	\$995	YES	YES	NO	NO	NO	NO
Telebit T3000	\$949	YES	YES	YES	NO	NO	NO
Multimodem MT1432BA	\$899	YES	YES	YES	NO	NO	NO
ZyXEL U-1496E	\$469	YES	YES	YES	YES	YES	YES

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Online automatic speed fall-back/fall-forward allows the highest throughput achievable during poor line conditions.

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Security password protection and automatic call-back features are designed so only authorized callers can access your system.

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Store up to 4 user configuration profiles in NVRAM, plus up to 10 user phone numbers and their associated passwords.

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Editor's Choice: ZyXEL U-1496E
 German Edition, 4/92

ZyXEL USA, 4920 E. LaPalma Ave., Anaheim, CA 92807
 All brand names and trademarks are the property of their respective owners.
 Comparison chart was completed in May, 1992.

MCAFFEE ASSOCIATES ANNOUNCES SHAREWARE CONTEST

McAfee Associates appears to be the first shareware company to complete a public stock offering (NASDAQ:MCAF). Last October they completed an initial public offering raising some **\$46 million** and according to founder John McAfee the company is claiming annual sales in excess of \$20 million. Additionally, rumors abound regarding their possible acquisition of one or more BBS software developers.

In January, McAfee Associates announced their sponsorship of the "**First International Shareware Contest**." The goal of the contest is to promote the shareware concept and heighten public awareness and encourage new shareware authors.

The contest is open to authors of new shareware programs for MS-DOS, Windows, and OS/2 environments. A prize of **\$1000** will be awarded to the best program in each of six categories with a grand prize of **\$2500** awarded to the program selected as the "**Most Innovative Shareware Program**." The six categories include:

Best DOS Business Application
Best DOS General Purpose Utility
Best Windows Business Application
Best Windows General Purpose Utility
Best OS/2 Business Application
Best OS/2 General Purpose Utility

To qualify, the contestant must be the author of a new shareware program released after **December 1, 1992**. Programs must be submitted to McAfee Associates prior to **March 1, 1993**. Awards will be announced **April 15, 1993**.

Submissions may be sent through the mail or uploaded to McAfee Associates' bulletin board system (BBS). Submissions must include the author's full name, address, and daytime telephone number.

McAfee Associates' BBS number is **(408)988-4004**. Upload submissions to the Contest Area on the main area of the

BBS, or mail to Attn: Shareware Contest, McAfee Associates, 3350 Scott Boulevard, Building 14, Santa Clara, CA 95054; **(408)988-3832** voice; **(408)970-9727** fax.

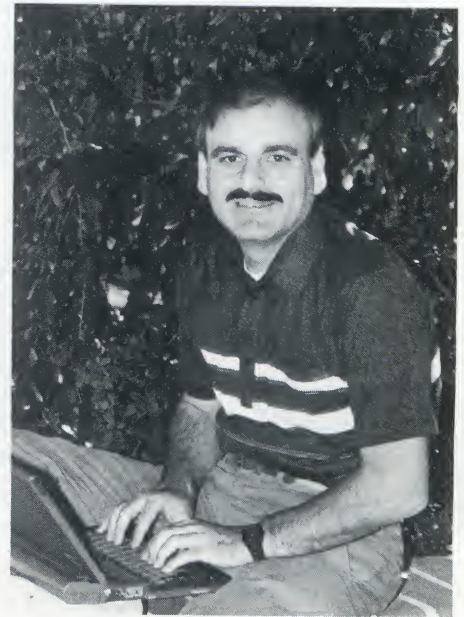
McAfee Associates, founded in 1989, develops, markets and electronically distributes software for personal computers and networks. McAfee Associates' primary product line consists of anti-virus software, and the company has recently released several general purpose utility products.

DIGITAL PHOTOGRAPHY ADVANCES BIT-BY-BIT KODAK PHOTO CD

by Nick Anis Jr. and Jack Rickard

According to industry estimates, there are 250 million 35 millimeter cameras worldwide snapping some 60 billion plus photos each year. The conventional wisdom outside of the PC world seems to be that Eastman Kodak, The Yellow Giant from Rochester, has produced a terrific new fun toy for affluent yuppies to view family photos on TV - that has a very limited market. The Wall Street Journal, for example, is not as convinced as Kodak that consumers en masse will plop another \$400 box on top of their VCR, abandon their photo albums all together and turn their TV into a slide projector. And they are likely correct. Kodak's push to revolutionize how we view photographs is probably destined to flop on the large scale. But for desktop publishing and multimedia applications for the PC community, it just might be a hit.

While American companies have long since lost the quality camera market to various Japanese, German and Swedish competitors — Nikon, Canon, Olympus, Minolta, Leica, Rolleiflex, Hasselblad, etc. — Eastman Kodak remains as a world leader in film technologies and processing materials, along with Fuji, the German company Agfa, and the British company Ilford. These four companies have long since adapted the old Gillette strategy: "give away the razor, in order to sell the blades." Each of these four companies has invested



Nick Anis Jr.

millions in the development of "electronic imaging" systems and processes. For the moment, it appears that Kodak has a lead in the race to market. In fact, Fuji Film and Konica have already signed onto the Kodak bandwagon.

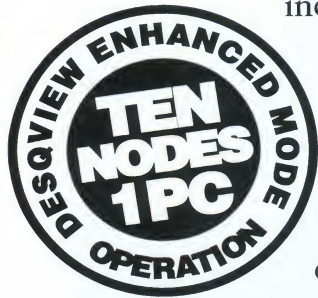
Photo CD is a digital image process layered on top of conventional 35mm film negatives. For 20 bucks you can have a 24 image roll of 35mm film developed at any of nearly 100 PhotoCD workstations scattered across the country and transferred to CD-ROM. A **\$100,000** Photo CD workstation scans the developed 35mm negatives and records them digitally to a Photo CD-ROM in five different resolutions. You can view them on your television with a **\$400** Photo CD "player," but more to the point, you can access them on your personal computer with any CD-ROM drive that's Photo CD compatible.

These digital images can be viewed directly from a Photo CD or read into a computer and converted and saved to hard disk in common PC image formats, such as **TIF, EPS, PCX, BMP, RIFF, GIF**, and so on. Off the shelf digital image editing software already available can be used to manipulate the images including doing color separations, and converting them into half tones and grey scale images, and if

THE BEST BBS SOFTWARE IS THE MOST EXPENSIVE BBS SOFTWARE.

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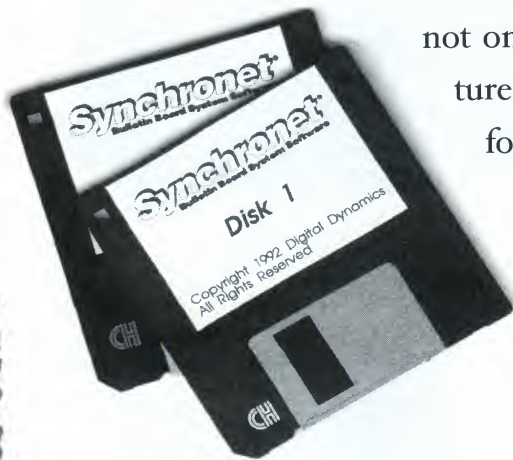
online you and your users are sure to be hooked. With hundreds

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Bi-level (group/subboard) message structure
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Multiple simultaneous networks
Multiple origin lines on a per message area basis
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QWK Message Networking

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Flexible call out schedules per network
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Multiple archive formats on a per network basis

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Unlimited file transfer protocols with DSZLOG support
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Bidirectional file transfer support
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Up to 500 online external programs/doors
Real-time multiplayer Blackjack included FREE!
Multiple industry standard door file formats supported

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Allow your callers to send and receive electronic mail to Compuserve, GENie, America Online, And hundreds of other hosts connected to the Internet...

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True 100% assembly language TBBS option module loads with your BBS to process inbound and outbound UUCP mail files continuously without ever taking your BBS offline to process mail.

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Your callers deal with Internet mail using all the features of the existing TBBS message system - replies, searches, message scan, forward, file attachments, message waiting que, .QWK offline mail readers (requires eSoft's QSO option module). PIMP makes global electronic mail easy for your callers to deal with - and easy for your system to actually transmit Internet mail messages within one minute after they are entered on your BBS.

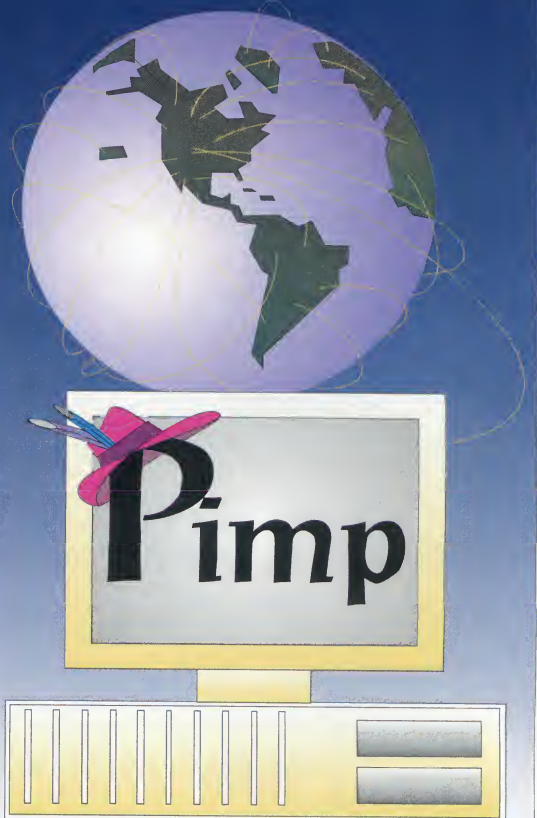
Let PIMP connect your TBBS system to the world!

PIMP for TBBS - Option Module Version - \$179.00 visa/mc accepted
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For more information or to order, Call Boardwatch Magazine at:

(303) 973-6038 voice, (303) 986-8754 fax, (303) 973-4222 BBS

*TBBS is a trademark of eSoft, Inc.

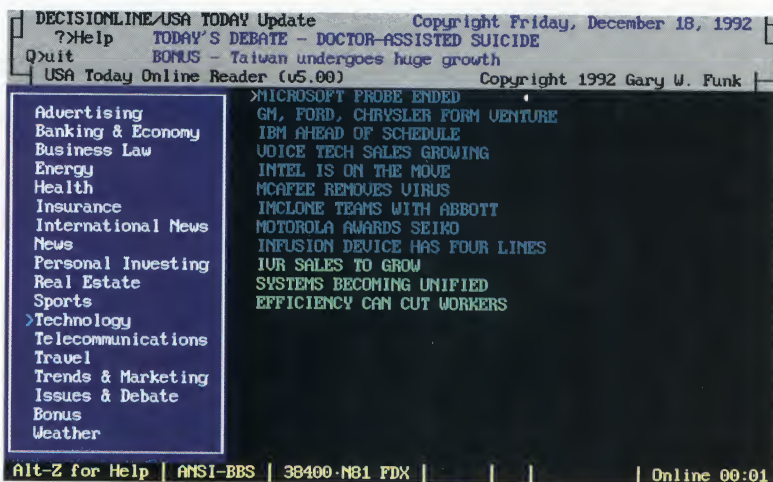


Personal Internet Mail Processor

PCBoard Sysops!

Now your callers can read USA Today online each morning with the...

USA Today Door for PCBoard

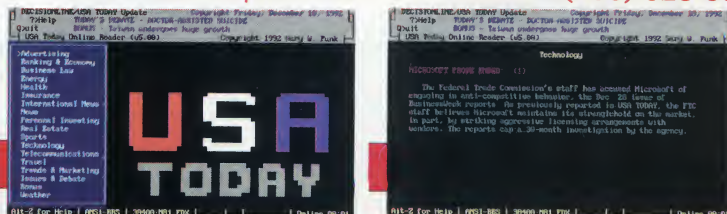


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Call Today!



desired, printing them on dot-matrix, laser, or high-end photographic printers.

Kodak has done an impressive job in launching Photo CD on the photographic and computer side of things. They have successfully created a sophisticated digital image and compression format based on several widely accepted standards. They have also wisely created a turnkey system for photographic developers (it's \$100,000 price tag is about the same cost of a one hour mini-lab), and provided all the critical computer and photographic support necessary for creating a whole new desktop digital imaging industry.

Photo CDs and digital imaging have a lot going for them. To start with they reduce or eliminate the notorious handling problems associated with film negatives because they are almost indestructible. They can be duplicated an unlimited numbers of times without any loss of resolution. They may not quite attain the resolution possible with film, but their digital images can be viewed and manipulated easily and relatively inexpensively on a personal computer. Once read into a personal computer, Photo CD images can be saved as new images in more traditional PC image formats on a hard disk without loss of resolution. These images can also be transmitted to other systems by modems, removable cartridge disks drives, and flopticals. Finally, prints made from Photo CD images do not look substantially different than prints made from film negatives.

Each image on a Photo CD is assigned a 3-digit ID number, and each Photo CD itself has an 4-digit ID number. Photo CD images are easy to transfer to and from other Photo CDs. To get a print made, you just send in a Photo CD and tell them which images to print: "Give me a 5 x 7 of #059." As part of the image transferring process 1 to 4 CD-sized sheets of numbered thumbnail prints are returned with the Photo CD to help you with this.

Each image is stored in a single compressed file containing all five resolutions.

KODAK PHOTO CD RESOLUTIONS

Level	Resolution	72 dpi Image size	204 dpi Image Size
Base/16	192h x 128v	1.78 x 2.67	.62 x .92
Base/4	384h x 256v	3.00 x 3.56	1.88 x 1.25
Base	768h x 512v	10.67 x 7.11	3.77 x 2.50
BaseX4	1536h x 1024v	21.34 x 14.22	7.53 x 5.01
BaseX16	3072h x 2048v	42.66 x 28.44	15.05 x 10.04

The digital images of Kodak's Photo CD may currently only support resolutions of up to **3072 x 2048** using **24-bit color** for over **16.8 million** different colors. This offers sufficient resolution to create excellent photographic prints that look the same as those made from photographic negatives. Prints are normally made from the **BASEX4** resolution.

Each image file set hogs a whopping **18 megabytes** in uncompressed form - typically compressing to a final archive of about **5 MB**. A fully loaded Photo CD can only between 105 and 140 compressed images. . But each file contains all five different image resolutions, all saved to a single archive file The first three resolutions are embedded directly, since they aren't that large. The remaining two, which do take a lot of space, are compressed before storage to achieve the final 5 MB storage size.

Kodak has been working closely with video display adapter manufacturers to ensure the next generation of co-processor cards, which will be available the first quarter of 1993, will be optimized for Photo CD. On top of all that, Kodak is already developing a **Photo CD Professional** with higher resolution of up to **4000 x 6000** pixels for professional publishing applications requiring top grade resolutions. This should be available by summer.

PhotoCD is notable in that we can have all the benefits of digital imaging while still using our existing 35mm cameras. And for personal computers it's great that after years of laboring with scanners, frame capture boards and what-not, snapshots can be taken and developed on Photo CD through stores, such as Fedco, and Long's Drugs (in Califor-

nia), and easily be read into personal computers. (Kodak has an toll-free number for locating Photo CD processing centers in your area: **(800)242-2424 ext 36**.)

So far, because of Apple's QuickTime software version 1.5, the Macintosh platform has a leg up over IBM compatibles with Kodak's Photo CD technology. QuickTime on a Mac recognizes the Kodak Photo CD format. (The current version of QuickTime only has drivers for Apple's CD300 drive, but Transtor, and FWB are about to release drivers that will allow other drives to be used.) QuickTime 1.5 creates phantom folders, a slide show script, and a Mac-based image viewer that all seem to be on the CD, but actually are part of the QuickTime software.

QuickTime's image viewer can be configured to call the image processing software of your choice. In fact, more than one program can be linked through the slide show viewer's Preferences menu. QuickTime makes the images on the disk appear to be PICT images in these phantom folders. The images don't actually exist until they are accessed by image viewer. The image viewer calls the current linked application, which is tricked into recognizing Photo CD files as a PICT file. In this way image applications Mac users already own and can access Photo CD image files.

Kodak is trying to get PhotoCD off the ground by promoting the development of software that uses the images. They offer **\$695** tool kits available for software developers to directly access photo CD images for Windows, Macintosh, and UNIX. Kodak also offers a **\$139** Windows product titled Kodak

PhotoEdge to manipulate PhotoCD images. And a scaled down version of Kodak search-and-retrieval product **Shoebbox** is bundled with several Photo CD compatible CD ROM drives and is also available (**\$399**) from software retailers and directly from Kodak. And basic software to display images from CD-ROMs titled **Photo CD Access** is available for **\$39**.

So far, **Adobe Photo Shop (\$895)** appears to currently be the most popular application for working with Photo CD images on Mac or PC. The advantage of **Photo Shop 2.5**, which is due to be released January 1993, is that the PC Windows and Mac versions will be identical.

But all the major image software publishers have indicated they will be supporting Photo CD. Programs currently supporting the technology (on PC and Macintosh) include Aldus' entire product line, and Adobe Systems Inc.'s **PhotoShop** image editors. Aldus will release a module for **PhotoStyler**. On the PC, **Micrografx Inc.**'s **Picture Publisher**, **Media Cybernetics Inc.**'s **Halo Desktop Imager**, and **Corel Systems, Inc.**'s **CorelDraw** drawing program. And most off-the-shelf Macintosh software is supported anyway because of **QuickTime 1.5**.

From a PC perspective all you need to get started is your existing personal computer with a 24-bit video card (often referred to as **TrueColor** - capable of displaying the 16.8 million colors), a Photo CD compatible CD ROM drive, a copy of **Adobe Photo Shop**, version 2.5, a 35mm camera with film, and \$20 bucks to send the film to be developed and transferred to CD-ROM.

There is an issue regarding CD-ROM drives. Any "XA" rated CD-ROM drive will actually read the PhotoCD disc. And the files are stored on the CD-ROM in standard **ISO 9660** format so most systems will display the first directory. However, the discs themselves are in some sense "reusable" in that you can take your existing CD to a developing station with a roll of exposed film, and the pictures can be ADDED to your existing CD. This is referred to by Kodak as "multi-session" in that more than one picture taking session is recorded on

each CD. This actually is done by creating additional file directories on the CD-ROM. Standard CD-ROM drives won't be able to read these added file directories. But a number of CD-ROM manufacturers are now coming out with "multi-session" CD-ROM drives that can. If you are shopping for a CD-ROM drive just to take advantage of PhotoCD, (or just shopping for a new CD-ROM drive), it is worthwhile to go ahead and get a multi-session model.

Six companies are already offering CD ROM drives compatible with multi-session Photo CD including Apple Computer with their model **CD300**, (**\$599**) Sony (the actual manufacturer of Apple's drive, is shipping their models **31A (\$299)**, and **7305 (\$499)**. Toshiba has an internal drive, the **XM-3301BSP40C0**, and external drive the **XM-3301E1P10Z0**. Mitsumi is shipping their **CRMC-LU005S** drive for OEMs. Genesis Integrated Systems is shipping the **GENSTAR 5000I**. Other units announced but not shipping yet include Pioneer's multi-disk drive, **DRM-604X** with a list price of **\$2,000** and Phillips's **CDD 461**.

Kodak, by the way, has worked closely with Philips to make Photo CD compatible with Philips's Compact Disc-Interactive (CD-I) specification. A Photo CD player can NOT play CD-I discs, but CD-I players CAN play discs in Photo CD format. This is because the Photo CD "XA" format is CD-I compatible. Besides recording and playing picture data, the Photo CD "XA" format can record and play interleaved audio text and image data. The specifications for this format, which Kodak calls the "Portfolio Format" are due to be released sometime in 1993. The extraordinary capabilities of Photo CD are not merely a new and interesting consumer technology, they are a powerful means of publishing interactive photographic images, text, and audio — in other words, multimedia presentations.

Kodak also maintains a list of compatible CD-ROM models and suppliers. You can call the Kodak Information Center at **800-242-2424 ext 53** to get a current list of compatible drives and suppliers. Some information is often available on the CompuServe CD-ROM forum as well.

Photo CD Contact Information

Eastman Kodak company

343 State Street
Rochester, NY 14650
(800)242-2424 Ext 36 - Photo Edge
Access Information Line

Adobe Systems, Inc.

Post Office Box 7900
1585 Charleston Rd.
Mountain View, CA 94039
(800)833-6687 Voice
(415)961-4400 International
(415)961-3769 Fax
(415)961-4992 Technical Support

Pioneer Communications of America

3255-1 Scott Blvd., Suite 103
Santa Clara, CA 95054
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(404)457-1300 Technical Support

Sony Corporation of America

655 River Oaks Parkway
San Jose, CA 95134
(800)352-7669 Voice
(408)432-0190 International
(408)432-0740 Fax

Mitsumi Electronics Corp., Inc.

6210 North Beltline Rd., Suite 170
Irving, TX 75063
(214)550-7300 Voice
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(408)970-0700 Technical support

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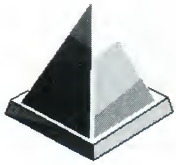
1000 Shelard Pkwy., Ste. 270
Minneapolis, MN 55426
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Phillips Consumer Electronics Co.

One Philips Drive
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Knoxville, TN 37914-1810
(800)722-6224 Voice
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(615)521-4406 Fax

Aldus Corporation

411 First Avenue South
Seattle, WA 98104
(800)333-2538
(206)622-5500
(206)386-8854 fax
(206)628-5737 fax information server



BOARDWATCH MAGAZINE



1993 READER'S CHOICE BBS CONTEST

Boardwatch Magazine is sponsoring a contest to find the 100 most popular bulletin board systems in North America - and the ONE BBS most popular among callers. The contest will run from January 1, 1993 through July 1, 1993. Winners will be announced at the **Online Networking Exposition and BBS Convention (ONE BBSCON)** held at the **Broadmoor Hotel in Colorado Springs, Colorado, August 26-29, 1993**. The Boardwatch 100 list will be published in subsequent issues of Boardwatch Magazine and distributed in electronic form world-wide.

PRIZES FOR BULLETIN BOARD OPERATORS

1ST PRIZE: The BBS system receiving the largest number of valid ballots will be named the most popular BBS. A trophy will be awarded to the top BBS at the **Online Networking Exposition and BBS Convention (ONE BBSCON)** held August 26-29th, 1993, at the Broadmoor Hotel in Colorado Springs, Colorado. Additionally, the winning BBS will receive air fare, hotel accommodations and registration at ONE BBSCON for the primary BBS operator as the guest of Boardwatch Magazine. Additionally, the system will be featured on the cover of Boardwatch Magazine with an accompanying feature length story about their system and a free full-page black and white advertisement in Boardwatch Magazine for a period of three months.

TOP TEN: The ten most popular bulletin boards selected by the voters will each receive an award trophy at on their system in Boardwatch Magazine, inclusion in a special top ten BBS listing in the magazine, and a free quarter-page black and white advertisement in three successive issues. Additionally, they will be listed in the Boardwatch 100 BBS list.

TOP ONE HUNDRED: The 100 bulletin boards receiving the most votes will each be listed in the Boardwatch 100 readers choice BBS list. This list will be published in Boardwatch Magazine and freely distributed electronically on thousands of bulletin boards world-wide.

IN CASE OF TIE. Positions for which an identical number of votes are received will be determined by point value established by the date stamp assigned to each received ballot. Time/Date stamp values are accumulated for all votes and a cumulative score assigned to each BBS based on date of receipt of ballots. Votes receive a date stamp value between 1 and 180 based on the day of the contest the vote is received. System with lowest (earliest)

cumulative date stamp score will prevail in event of tie.

PRIZES FOR VOTERS

All valid ballots submitted by voters will be entered in a random sweepstakes drawing. As of the opening date of this contest, prizes include two U.S. Robotics Courier Dual Standard 16.8K Modems, two Hayes OPTIMA 14400 + FAX 144 modems, and two ZyXEL U-1496 14,400 bps modems - and more are on the way. A minimum of six valid ballots will be selected from all entries and each will receive a free modem - from the most popular modem manufacturers in the world.

RULES FOR CALLERS

Each voter can vote once, for a single bulletin board system. Each ballot must be fully completed, and individually mailed by each voter. We will verify ballots as necessary. There are three ways to vote:

1. Complete this ballot and mail to: BOARDWATCH MAGAZINE, READERS CHOICE BBS CONTEST, 5970 South Vivian Street, Littleton, CO 80127

2. Complete this ballot and FAX to (303)973-3731.

3. Or, dial the Boardwatch BBS at (303)973-4222 and complete the online ballot provided on the main menu.

Balloting closes at 23:59:59 on June 30, 1993. Last year it ended at midnight on July 1 and caused all manner of grief and confusion so we're cutting a second off of this year's contest.

This contest is not limited to Boardwatch Magazine subscribers, and no purchase of anything is required to participate in this contest. Reasonable facsimile's of this ballot are acceptable, so long as all specified information is included.

We held this contest during 1992 and it generated 11,152 votes by the close of balloting for some 1250 different bulletin boards. The TOP system received about 450 votes. Your individual vote can have a tremendous impact on the outcome of this contest. Further, the odds of winning a modem in last years contest, were 1 in 1394. You won't get those odds in the lottery.

TITLE OF BBS YOU VOTE FOR AS THE BEST: _____

PRIMARY BBS ACCESS TELEPHONE NUMBER: _____

VOTER NAME: _____ VOICE PHONE NUMBER: _____

STREET ADDRESS: _____

CITY: _____ STATE: _____ ZIP CODE: _____ COUNTRY: _____

PRIMARY COMMUNICATIONS SOFTWARE YOU USE: _____

PRIMARY MODEM MANUFACTURER AND MODEL: _____

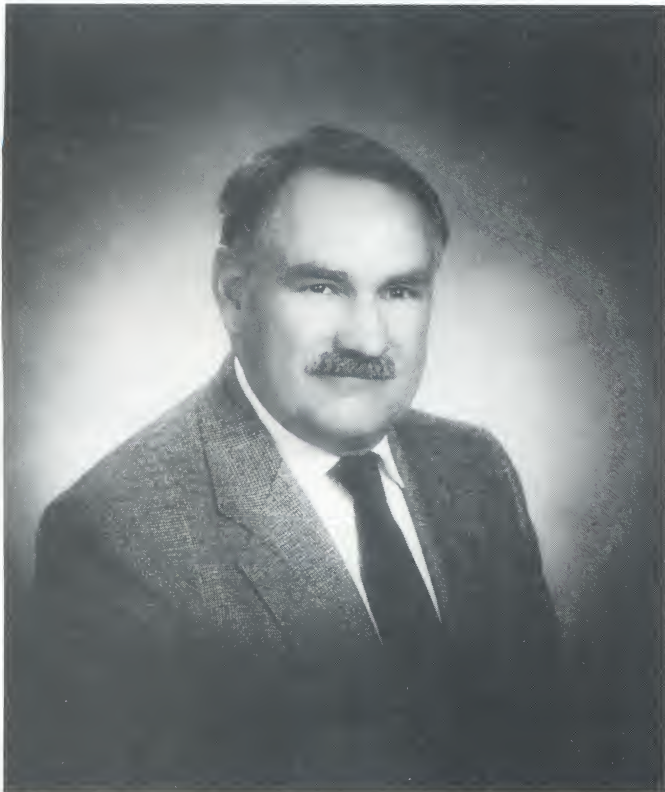
HIGHEST SPEED YOUR MODEM SUPPORTS: ☐ 1200bps ☐ 2400bps ☐ 9600bps ☐ 14400bps ☐ 19200bps

DO YOU USE MS WINDOWS (Y/N): _____ DO YOU HAVE A SECOND TELEPHONE LINE FOR USE WITH YOUR MODEM (Y/N): _____

TOTAL CALLS YOU MAKE TO BBS PER MONTH: _____ WHEN DID YOU MAKE YOUR FIRST BBS CALL (MM/YY): _____

AGE: _____ SEX (M/F): _____ PROFESSION: _____

SIGNATURE: _____ DATE: _____



FrEdMail Author Al Rogers

As an interesting side note, Kodak makes a premium grade of color film titled **EKTAR**. It is great for enlargements but it is available in a restricted number of film speeds. Apparently, the film exhibits less "exposure latitude" and this translates to smaller file sizes for the same picture resolution. But the Photo CD process will work with ANY 35 mm slide or print film. Only 35mm film is supported at this point. They expect to be able to handle the 4X5 format by this summer.

More interesting yet, Kodak is apparently working furiously on a largish Unix-based online information service they are tentatively titling the **Kodak Picture Exchange**. This online service will feature a fairly hefty connect time charge and some requirement to use a Kodak terminal program. But it is directed at stock photo houses. Some of these photo houses are warehousing MILLIONS of photographs using aging technology to keep track of what is what. Kodak would like to have them store images on this online service. Art directors, advertising designers, etc. could then dial the

system, and view the low resolution thumbnail images right online. Once they browse through a few million photos by modem and find the one they like, they will be able to order, pay for, and download the high res version from the system, or order transparencies/negatives/whatever from the stock photo house directly. If Kodak can position this as stock photo exchange central for the industry, and who better than Kodak could, it may well revolutionize the way people buy publication rights to photographs, and the way stock photo houses warehouse pictures. They are targeting a summer

93 launch date. Note too Unix and TCP/IP technology. The whole thing could eventually be available globally on the Internet.

And while the idea of viewing family photos on the television set may not catch on, the PC world is already moving toward CD-ROM as a standard storage medium. As more CD-ROM drives adopt Kodak Photo-CD compatibility, moving photographs from the 35 mm camera to the PC in very high quality scans is likely to become a lot easier.

EDUCATION IN THE MATRIX: THE FrEdMail NETWORK

by J. Scott Christianson
and Ava L. Fajen

The Information Infrastructure and Technology Act of 1992 called for an expansion of the United States com-

puter network in order to "improve education at all levels, from preschool to adult education." The frontier of using computer networks in education is already being pioneered by a network of BBSs called the **Free Education Mail (FrEdMail) network**.

Since its inception in 1986, the FrEdMail network has been developing virtual classrooms - places where students from around the world can meet electronically to share information and collaborate on learning projects.

FrEdMail was founded by Al Rogers, a former elementary school teacher and education technology consultant to the San Diego County Office of Education. Mr. Rogers is currently the Executive Director of the FrEdMail Foundation, a non-profit group that was created to manage FrEdMail after it grew so large that it was impossible for one part-time person to maintain.

Mr. Rogers describes FrEdMail as "an informal, grass-roots, telecommunications network that helps teachers and students exchange information freely and simply. With over 150 nodes, it lets teachers share experiences with student assignments, distribute teaching materials and curriculum ideas, promote the development of effective reading and writing skills, and obtain information about workshops, job opportunities, legislation affecting education, and new nodes of the growing network.

"Its primary function is to transmit student writing from one place to another, thereby opening up distant audiences for students. FrEdMail is more properly thought of as a writing tool, one which can be used effectively at any grade level and in any subject. The purpose, and emphasis behind FrEdMail is to provide real audiences and real purposes to motivate writing!"

A TEACHING TOOL

There are over 150 FrEdMail BBSs (in the United States, Australia, Puerto Rico, United States Virgin Islands, and Ireland). Last year, approximately 5000 teachers used this network to conduct classroom learning projects.

In a recent issue of the FrEdMail newsletter, teacher Dennis Cowick explained how he uses FrEdMail to compliment the CNN Newsroom program (a short news program that teachers can tape to show their students): "I have been using the daily broadcast of CNN Newsroom for several years now and have found it extremely beneficial to my 7th and 8th graders, especially when I have the daily lesson plans that are available on FrEdMail. I set my VCR to record the fifteen minute Newsroom when it comes on at 12:45 AM and then view it in the morning before class. One of my students calls a FrEdMail board at the beginning of the day and downloads the 4-6 pages of lesson plans, worksheets and handouts that go with the video segment for that day.

"One particular lesson involved a special feature on an episode of CNN Newsroom that showed students visiting their parents in prison. We used several of the suggested discussion topics from the lesson plan we downloaded for that day. But what really capped all this off was a writing assignment idea in the daily lesson plan.

"The writing assignment suggested that students write to their own parents and describe what they, as children, really wanted and needed from their parents. The resulting letters were so heartfelt and insightful that they were published in our year-end literary magazine."

In another project, called Experts Speak, a group of students assumes the persona of an historical figure. Other students on the network direct questions to the group, until they can identify the historically important person.

In the Acid Rain project, students collect rain and snow fall, measure the acidity of the precipitation, upload their data and compare it with the measurements of students in different areas of the country.

Students participating in the Commercially Speaking project record data about the television commercials that they watch. This data is then entered into a database that is transmitted through FrEdMail to other classes. After several classes have uploaded their databases,

students can learn about demographics by analyzing when certain commercials are broadcast in different regions of the world.

These are just a few examples of the hundreds, if not thousands, of learning projects that have been successfully completed through the FrEdMail network.

THE NETWORK

Although any computer can be used to dial into a FrEdMail BBS, all FrEdMail BBSs are Apple II computers. Although the Apple II computer lineage may seem primitive by today's standards, it is well suited to this education-oriented network for several reasons. First, almost every school in the nation has one or more Apple IIs; since school districts can use existing hardware, it isn't expensive to set up a FrEdMail BBS. A school that doesn't have a spare Apple II can purchase one cheaply. In addition, most sysops on FrEdMail are teachers, who are already familiar with the use of Apple IIs. With FrEdMail, the sophisticated BBS software makes up for the old hardware.

The network was named the Free Education Mail network because there are no charges for dialing up a local FrEdMail system or for sending netmail (although the BBSs pay an annual subscription fee, see below). The FrEdMail network is constructed along the lines of other BBS networks. The network is divided into regions and sub-regions; regional and sub-regional mail hubs coordinate the distribution of mail and echo coordinators oversee the distribution of network conferences.

INTERNET CONNECTIONS

The FrEdMail network is linked to the Internet through gateways between individual FrEdMail BBSs and UNIX computers at institutions of higher education. These UNIX computers are in turn connected to regional networks, which provide access to the Internet. The first network to establish a gateway with FrEdMail was the **California Education and Research Federation network** (CERFnet). CERFnet links over 300 of the leading research and educa-

tion centers in California at data transfer rates of up to 1.544 megabits-per-second (T1). The National Science Foundation (NSF) awarded a **\$226,000** grant for the development of a gateway between CERFnet and FrEdMail.

Stephen Wolff, Director of NSF's Division on Networking and Communications Research and Infrastructure says: "The NSF is committed to improving the performance of students in math and science, and CERFnet is serving as a conduit for education. The National Research and Education Network (NREN) is pushing the development of gigabit speeds for academia and industry and, at the same time, pulling all levels of education towards the inherent benefits of connectivity to the national infrastructure. The development of this gateway will facilitate a national network of academic computing hubs that act as local file servers to their regional K-12 FrEdMail sites, via existing facilities and transportation networks."

Sid Karin, Director of the San Diego Supercomputer Center (SDSC) also commented on the gateway between FrEdMail and CERFnet: "While the SDSC and CERFnet are quite correctly identified with the higher education and high technology communities, we are the perfect springboard for this initiative with FrEdMail. Classrooms across America should have access to the computational tools of the Information Age to stimulate the minds of American youth. The needs of educators, scientists and engineers have driven the development of this technology which is now available to K-12 teachers and students on an affordable basis."

The FrEdmail Foundation estimates that there may be 50,000 teachers on the Internet. By uniting the Internet community of teachers with the K-12 teachers on FrEdMail, a FrEdMail-Internet link allows both groups of teachers to share resources and collaborate on projects. Besides CERFnet, several other networks and computing sites are now serving as conduits for mail between FrEdMail and the Internet.

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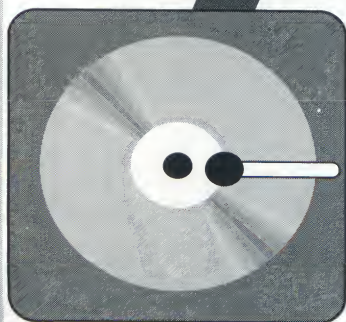
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FrEdMail BBS Network

Location	System	Phone	bps
Sydney, Australia	Cabramatta E.R.C.	+26072986	2400
Guilford County, NC	Guilford County	919-271-0649	1200
Sydney, Australia	A Normanhurst B.H.S.	+24897785	1200
Kankakee, IL	Kennedy Elementary	815-932-7980	
Onslow, NC		991-455-8705	
Rialto, CA	Rialto School Dist	714-820-6865	2400
San Diego, CA	FrEdMail Central	619-587-7993	9600
Sydney, Australia	Australia FrEdMail	+26075286	2400
St. Thomas, USVI	Caribbean CUE	809-777-4026	1200
University of Puert	Orillas en Puerto Rico	809-763-3925	2400
New Haven CT	New Haven	203-777-5008	2400
North Arlington, NJ	North Arlington Schools	201-955-6050	2400
Springfield, NJ	Springfield Public Schools	201-376-9025	2400
Irvington, NJ	Irvington Public Schools	201-371-1247	2400
Newarrk, NJ	Newark School District	201-705-3787	2400
Berkeley Heights, NJ	Berkeley Heights Schools	908-464-8929	
Larenceville, NJ	Lawrence Township Schools	609-538-1347	2400
Lakehurst, NJ	Manchester Schools	908-657-8883	2400
Scarsdale, NY	Scarsdale Middle School	914-721-2653	1200
Brooklyn, NY	Brooklyn BBS	718-783-6723	2400
Mineola, NY	Nassau BOCES	516-877-1095	1200
Wyong, Australia	Wyong High School	+043511093	2400
East Petersburg, PA	Lancaster/Lebanon IU	717-569-9289	2400
East Petersburg, PA	Lancaster/Lebanon IU	717-270-2942	
Pocono Mts., PA	Pocono Area Educator's Tec	717-424-3226	2400
Philadelphia, PA	Philadelphia	215-233-0240	1200
Reading, PA	Reading	215-926-8540	2400
Wilmington, DE	St. Marks High School	302-738-0572	9600
Hunt Valley, MD		410-666-2811	2400
Arlington, VA	Long Branch School	703-841-9598	1200
Winston-Salem, NC	Forsyth Cnty Bd Educ	919-727-2213	1200
Asheboro, NC	Asheboro City Schools	919-625-3520	2400
Burlington, NC	Micro-5 Users Gp	919-222-9348	2400
High Point, NC	High Point Schools	919-888-2561	2400
Davidson Co, NC	Davidson Co Bd Ed	704-956-1254	2400
Sanford, NC	Lee County School District	919-776-7135	2400
Micro, NC	Johnston County Schools	919-284-4736	2400
Roxboro, NC	Person Co Schools	919-597-8528	2400
Raleigh, NC	Wake Co Schools	919-850-8951	
Durham, NC	Durham Public Schls	919-560-3815	1200
Greenville, NC	East Carolina University	919-757-4154	2400
Swan Quarter, NC	Hyde County Bd of Ed	919-926-0953	1200
Washington, NC	Washington City Schools	919-946-4934	2400
Wilson, NC	Wilson Co BdofEduc	919-243-1601	9600
Monroe, NC	Union County Schools	704-283-3538	1200
Wadesboro, NC	Wadesboro MS	704-694-4523	2400
Rowan, NC	Rowan-Salisbury Schools	704-639-3068	2400
Charlotte, NC	Charlotte-Mecklenburg Scho	704-343-5366	
Carthage, NC	Board of Educ	919-947-3954	2400
Bladen County, NC	Bladen County Schools	919-862-8998	2400
Rockingham, NC	Rockingham Jr. Hi	919-895-1416	1200
Hickory, NC	Catawba Co Bd Ed	704-256-8136	2400
Boone, NC	Appalachian State Univ	704-262-3094	2400
Taylorsville, NC	Alexander County Schools	704-495-8806	1200
Bryson City, NC	Swain Co Schools	704-488-2290	2400
Asheville, NC	Buncombe Cnty Schls	704-255-5992	1200
Charleston, SC	Morningside Middle School	803-566-1812	
Newnan, GA	Heritage School	404-251-4904	2400
Palatka, FL	Jenkins Middle School	904-329-0627	
Knoxville, TN	Knoxville Ed Computing	615-539-6252	2400
Tupelo, MS	Tupelo Public Sch. Dist	601-841-8857	2400
Jenkins, KY	Jenkins High School	606-832-2185	2400
Paragon, IN	Martinsville School Distri	317-537-2277	2400
Mt Clemens, MI	Mt. Clemens Comm. School	313-469-5805	
Novi, MI	Novi Woods Community Schoo	313-344-8870	2400
Pontiac, MI	Oakland County Schls	313-858-1873	1200
Mt. Pleasant, MI	Central Mich Univ	517-774-7704	9600
Portland, MI	Oakwood Elementary	517-647-7474	9600
Allendale, MI (G.R.)	Grand Valley State Univ	616-895-3202	
Cedar Falls, IA	Area Education Agncy 7	319-273-8248	1200
Bayport, MN	Stillwater High School	612-439-1064	2400
Eagan, MN	Rosemount Apple Vally Eaga	612-683-6832	2400
Minneapolis, MN	Minneapolis School Dist	612-627-2170	2400
Detroit Lakes, MN	Detroit Lakes JHS	218-847-9509	2400
Morton, IL	Morton Unit School Distric	309-263-2168	1200
Peoria, IL	Bradley University	309-667-3686	2400
Urbana, IL	Urbana School Dist	217-384-3554	2400

Champaign, IL	Univ of Illinois	217-333-2246	1200
Champaign, IL	University of Illinois	217-244-3368	9600
Danville, IL	Danville High School	217-431-5885	
Edwardsville, IL	SOILED Net (So. IL Educ Ne	618-692-3595	2400
Springfield, IL	Springfield District	217-525-3349	2400
Zeigler, IL		310-391-4299	
Florissant, MO	T.E.N.(Technology Educ. Ne	314-831-7368	2400
St. Louis, MO	Regional Consortium	314-894-5592	2400
Lee's Summit, MO	R-7 Lee's Summit Schools	816-524-5239	1200
Columbia, MO	Columbia Public Schools	314-886-2784	2400
Springfield, MO	Southwest Missouri Consort	417-895-2721	
McPherson, KS	McPherson USD #418	316-241-1250	9600
Lincoln, NE	Lincoln Public Schls	402-436-1416	1200
Lincoln, NE	Pershing Elementary School	402-436-1471	1200
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Monticello, AR	Univ of Arkansas	501-460-1965	2400
Little Rock, AR	Univ of Arkansas	501-569-3268	2400
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Cheyenne WY	Wyoming Dept Educ	307-777-5945	2400
Las Vegas, NV	Las Vegas CUE	702-898-8552	9600
Los Angeles, CA	Los Angeles Unified	310-391-4299	
Torrance, CA	Torrance Unified District	310-542-5378	1200
Centralia, CA	Centralia School Dist	714-562-9211	2400
Anaheim, CA	Anaheim UHSD	714-220-4088	1200
Cypress, CA	Lexington JHS	714-761-8949	1200
Pomona, CA	Cal Poly Univ	714-869-2328	1200
Chino, CA	Chino High School	714-591-1329	2400
Claremont, CA	Claremont High School	714-621-2310	2400
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Glendora, CA	Charter Oak	818-963-2095	1200
Ontario, CA	Ontario Montclair SD	714-986-9890	1200
Bonita, CA	FrEdMail Central	619-475-4852	2400
Encinitas, CA	LaCosta Hts Elem	619-944-4383	2400
Encinitas, CA	Mission Estancia Elem	619-943-2012	2400
Oceanside, CA	Jefferson JHS	619-757-3180	2400
Lakeside, CA	Lakeside MS	619-390-2689	2400
El Cajon, CA	Cajon Valley USD	619-588-0948	1200
Encinitas, CA	Park Dale Lane Elementary	619-944-4398	1200
Encinitas, CA	Encinitas Union	619-944-4316	2400
Escondido, CA	Escondido Union	619-432-2420	1200
Los Angeles, CA	Pepperdine Univ	213-568-5551	1200
San Marcos, CA	San Marcos Unified	619-774-8547	
Ramona, CA	Ramona School District	619-788-5082	1200
San Diego, CA	San Diego USD	619-295-9591	2400
San Diego, CA	Pacific Beach MS	619-483-2097	2400
San Diego, CA	San Diego State Univ	619-594-3428	1200
San Diego, CA	US Internat'l Univ	619-693-4582	1200
Imperial Valley CA	El Centro USD	619-339-6401	
Indio, CA	Desert Sands USD	619-564-6142	1200
Lake Elsinor, CA	Lake Elsinore Unified SD	714-245-0408	2400
Redlands, CA	Redlands Unified School Di	714-793-9858	2400
Elsinor, CA	Elsinore School District	714-678-9395	1200
San Bernardino, CA	Azusa Pacific	714-888-0047	
San Bernardino, CA	San Bernardino City Unifie	714-888-1573	2400
Hemet, CA	Hemet FrEdMail Center	714-925-0836	
Moreno Valley, CA	Vista Heights Middle Schoo	909-485-5550	2400
Fullerton, CA	Sunny Hills HS	714-870-3423	9600
Newport Beach CA	Newport Mesa USD	714-556-3177	2400
Orange County, CA	Orange County Office Ed	714-966-4313	1200
Orange County, CA	Orange County Office Ed	714-966-4313	1200
Norwalk, CA	Norwalk-La Mirada USD	213-868-4773	1200
Fullerton CA	Fullerton Elem	714-447-7496	1200
Garden Grove, CA	Pacifica High School	714-663-6064	
Orange, CA	Orange USD	714-997-6387	1200
Mission Viejo, CA	Saddleback Valley Unified	714-586-6297	2400
Madera, CA	Alpha Elem	209-674-4801	2400
Fresno, CA	Fresno Unified School Dist	209-237-2839	2400
Antioch, CA	Antioch District	510-778-2722	
Pleasant Hill, CA	Contra Costa County Office	510-934-5041	
Solano County, CA	Solano County Office Educ	707-427-1268	
Livermore, CA	LawrLivrLabSciEd	415-373-1231	1200
San Leandro, CA	San Leandro USD	510-895-1785	9600
Oakland, CA	Oakland USD	510-834-2636	2400
Sausalito, CA	Autodesk Foundation	415-721-0680	2400
Cupertino, CA	Cupertino Unified	408-253-5385	1200
San Jose, CA	Morrill MS	408-942-1425	2400
San Jose, CA	Berryessa USD	408-946-7325	2400
San Jose, CA	Piedmont Middle School	408-259-6855	2400
Austr Bargo, Australia	Wirrimbirra F.S.C. _	+46841701	2400
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HOW THE GATEWAY WORKS

A FrEdMail-Internet connection works by using college and university UNIX computers as mail servers for local FrEdMail BBSs. Instead of maintaining accounts on the UNIX computer for every user on the FrEdMail BBS, all the mail for people on the BBS is stored in one account on the UNIX computer. Once a day, the FrEdMail BBS dials up the UNIX computer, receives a mail packet from the UNIX system and sends an outgoing mail packet to the UNIX computer. The FrEdMail BBS software then sorts the mail packet it received and distributes the mail to individual user accounts. The UNIX computer extracts mail from the packet it received from the FrEdMail BBS and sends the messages out through the Internet.

To setup a UNIX-FrEdMail gateway, the UNIX-FrEdMail Gateway software must be installed on the UNIX computer (the BBS requires no additional software). The UNIX software consists of two files: **freduucp.tar.Z** and **fredux.tar.Z** and is available via anonymous FTP from **nic.cerf.net** (in the **fredmail** directory). These files are copyrighted by Gregg D. Brekke (**greggb@pro-fred.cerf.fred.org**) and the FrEdMail Foundation. There is a **\$250** licensing fee for the software, which helps cover costs of technical assistance. For more information on the UNIX gateway software send an email message to: **arogers@bonita.cerf.fred.org**.

SCHLnet

The FrEdMail Foundation has recently initiated several moderated newsgroups that are distributed through the Internet, FrEdMail, UUCP and other networks. These newsgroups (seven so far) are collectively referred to as SCHLnet and are distributed together as a "boxed set" of newsgroups. SCHLnet was created to distribute "ideas, resources, opportunities, and information of specific relevance to teachers and their students, without the extraneous and sometimes offensive distractions posed by Usenet newsgroups."

Because the conferences are moderated, the foundation charges a fee for receiving SCHLnet. The current fee structure

is based on the number of teachers and adult users that will have access to the SCHLnet newsgroups: **\$25** per year for 1-4 people, **\$250** per year for 4-300 people, **\$450** per year for 300-700 people and **\$750** per year for 700-1500 people. The FrEdMail Foundation will give free one-month trial subscriptions to those who are interested in receiving SCHLnet. For more information about SCHLnet contact: **fred@acme.fred.org**.

SETTING UP A FREDMAIL SYSTEM

All FrEdMail BBSs must use the FrEdmail BBS software produced by the FrEdMail Foundation. The latest version (1.3) costs **\$149** and runs on **Apple IIe**, **Apple IIGs**, and **Apple IIplus** computers (or a Macintosh LC with an Apple IIe emulation card). It will not work on an **Apple IIc** computer because of a problem with the IIc's serial port.

Each BBS on the FrEdMail network pays an annual consortium subscription fee of **\$150** to the FrEdMail Foundation for network maintenance, technical support and software updates.

The FrEdMail Foundation has designed their BBS software to be easy to use. Most of the sysops are classroom teachers, many of whom have no special technical skills nor the time to learn a complicated BBS program. Like several other BBS programs, the FrEdMail BBS software supports calls from people who use a Telecommunications Device for the Deaf (TDD) to communicate. (TDDs operate at 110 and 300 baud.)

In addition to the FrEdMail BBS software, the FrEdMail Foundation sells several good teaching materials. The foundation's book, *Telesensations: The Educators' Handbook to Telecomputing* (\$34.00), is an excellent resource that contains over 100 telecomputing activities for students and lots of helpful technical information. The foundation also offers a prepackaged teacher training workshop called *"T 'n T: Telecomputing and Teachers"* (\$249). This package includes: syllabi, overheads, 150 pages of handouts, three video tapes, and a FrEdMail simulation program. (The simulation program is available separately for **\$25**.)

The foundation also publishes a quarterly FrEdMail newsletter (\$10 per year).

We asked Al Rogers what the long term goals for the FrEdMail Network are. He says, "Long range, the Apple II stuff will disappear. However, the FrEdMail content, in the form of Usenet style newsgroups, will be our mainstay. We'll get out of the technical support stuff and focus on what we do best: curriculum and instructional content and support."

FrEdMail's adventure in computer-mediated education has blazed a trail for the future of educational networks. Global virtual classrooms can expand the walls of the traditional classroom and provide students with a uniquely dynamic learning environment.

To order the FrEdMail BBS software or more information contact: FrEdMail Foundation, P.O. Box 243, Bonita CA 91908; or at **619-475-4852** (voice); or at **arogers@bonita.cerf.fred.org**.

[*J. Scott Christianson (Internet: jsc@igc.org) is a Research Specialist at the Mason Institute of Ophthalmology in Columbia, Missouri, and the assistant sysop of the Coin of the Realm BBS (data: 301-585-6697). Ava L. Fajen is a Research Associate for the Missouri Coordinating Board for Higher Education in Jefferson City, Missouri, where she works to improve math and science education in the state (Internet: ava?cbhe400%admin@admin.mocbhe.gov). The two are engaged to be married. -Editor*

MACINTOSH BBS NEWS

by Bill Gram-Reefer

WITHOUT A CLUE

You don't need to be Sherlock Holmes or a Greek interpreter to figure out that the ponderous fast-changing world of telecommunications services is about to mutate into a totally new animal. And it will take more than a scandal in Bohemia

to stop it. Faster than a silver blaze, the slippery beast, has jumped out of the cardboard box with Apple's recent announcement that it will use technology developed by America Online (AOL) to deliver an enhanced version of **AppleLink** and other Apple-branded information services that the company will market in the near future. Essentially, the agreement gives Apple a license to access AOL's communications software.

It's not like Apple has never competed with its own third-party developers before. First it was the peripheral manufacturers, then it was the software guys, so Apple had to spin off Claris. And, more recently, it has even begun to compete with its resellers. Seemingly, Apple just couldn't be happy with selling computers and supporting customer-service SIGs on major boards and every user group BBS! Oh, no; now it's got to go and compete with service providers like General Electric, H & R Block, Pac Bell, Disneyland for all we know, Dow Jones News Service, BMUG, and MCI — not to mention every poor Mac sysop trying to run a BBS dedicated to "local Macintosh support."

The key to understanding such a gruesome plot that only an evil genius like Moriarty could devise, is the fact that Apple — through its Apple Online Services (AOS), a business unit of Apple's Personal Interactive Electronics division (PIE) — desperately needs to ensure the successful introduction of its **Newton** and other brands of **personal digital assistants** (PDAs) soon to be dumped on an unsuspecting market.

So the game is afoot. Just as **MacWrite** and **MacPaint** came bundled with the original 128K Macs, Apple, through AOS, plans to give consumers the illusion that there is actually something useful to do with these new PDA gizmos. And, even if it's his last bow, John Sculley intends on making it quite clear as to how PDAs should be done rather than allow three-dozen former Galacticom hacks, Hermes zealots, Bill Atkinson, or worse — Microsoft, confuse addled consumers with neat, but not-quite-right variations on the PDA theme. So Apple picked AOL's painfully slow graphical user interface (GUI) to burn into

Newton's ROM, while threatening to incorporate it as an additional module within future versions of **AppleTalk**, Apple's equally slow networking protocol. To sum up, Apple is going to use AOL's GUI and other technologies to create a foundation to accelerate the adoption of a "common services platform" for PDAs. Could this be the BBS interface standard we've all been waiting for, or merely Apple's answer to **Gameboy**?

Rather than building PDAs around applications like spreadsheets or **Donkey Kong**, Sculley predicts "content and services," as the focus for PDAs. But what does he really mean? Look at it this way. Just as Nintendo successfully barred third-party software providers like Atari from writing games for its proprietary system without license, Apple, through control of the essential OEM hardware design, dictating the software interface for the primary PDA application (communications), and by initially providing some of the core content and services, means to freeze independent software and hardware developers from cashing in on the early PDA action unless the right players say "pretty please" and mean it. How would Sony say that, I wonder?

It also means that if you run a Macintosh-based BBS, don't expect too many calls from PDA owners. It's a different industry, don't you know; at least according to Sculley. Not quite the record business, and not quite the computer business. Life's tough. Yet, all of this should be no Boscombe Valley mystery to anyone who runs a commercial service, a modest hobbyist system, or even a budding network, because, if you run a BBS, it's all a case of identity; you already know that "content and services" is your business, don't you?

For the final problem, as you walk down technology's valley of fear, is a study in scarlet that ponders the macabre question: what threatens the existence of your BBS? If you're as smart as the Reigate Squires, you know it's not just a PDA problem, but more a matter of keeping up with INNOVATION and constantly learning how to SPECIALIZE and ADD VALUE. But if, like the man with the twisted lip, you chant the



same-old: "Colonel Mustard, in the kitchen, with the lead pipe," answers, your BBS is destined to become a worried bone for the hound of the Baskervilles to gnaw on.

So forget Newton and PDAs for now. Because the best thing you could do for your BBS is this: instead of running yet another tiresome "local Macintosh support" board, why not turn your BBS, for instance, into a system dedicated to the work of Sir Arthur Canon Doyle, offering an online, or even a play-by-email, detective-oriented role-playing game. Why? It's elementary, my dear Watson — ka-ching is the cash-register-like sound a successful BBS makes. And if Apple's going to offer online "content and services" in spades, then you'd better come up with a couple of good reasons why people should call your number.

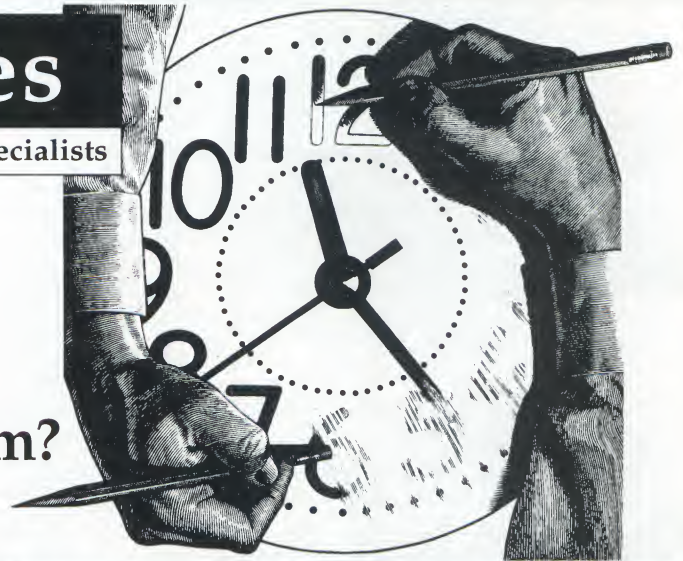
WHY ARE WE DOING THIS?

In case running a networked BBS is your thing, and you aren't all that terribly happy with FidoNet or RIME, several new distributed Macintosh networks have been slowly taking shape and deserve some attention for their scope, vision, and, in most cases, execution. Interestingly, each of these budding networks is built around a different proprietary Macintosh host software program. **NovaNet** is based on ResNova's **NovaLink Professional**, and **OneNet** uses SoftArc's **FirstClass**.

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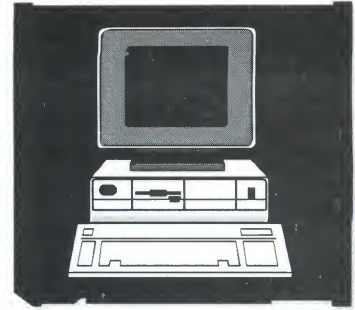
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GO-2 User Interface

GO-2 is the program for all who want or need a SIMPLE user interface. GO-2 has a "point and shoot" interface for ANSI users, all they need do is use the cursor keys to highlight the activity they want and hit the <Enter> key. It just doesn't get any easier! It can be used with or without menus and was designed to be extremely flexible and to allow SysOps to make the navigation of a BBS so simple that anyone can do it quickly and easily! No longer do you have to worry about whether your users and customers are "computer literate"! You could easily set up an entire system using only GO-2. Think of it, a TBBS installation with ONE menu and ONE call to GO-2! With TBBS, TDBS, GO-2 and the TBBS manual you can quickly easily install a complete system. And with the help files within GO-2 you might not even need the manual!

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With SNAP you can integrate NAPLPS (North American Presentation Level Protocol Syntax) graphics menu and file displays with all your standard TBBS menus. Using TBBS's {filename.ext} menu calls and macros for other menu directives, you can fully implement a NAPLPS graphics user interface quickly and easily. Simply edit and compile the included files. SNAP comes with sample .SDL, .QAL, .NAP, and all necessary NAPLPS initialization files. TDBS is NOT required.

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NovaNet is just one of the features of NovaLink Professional. It offers wide area sharing of files and messages through a hierarchical network structure which is administered by ResNova. Each server has a supervisor node directly "above" it in the hierarchy. These nodes can exchange mail, messages, and files. Then, the supervisor node passes the information onto a network hub, which distributes it to other points on the network. Since messages from one server can be shared with other servers worldwide with only one phone call to one other server, calls to many different servers are eliminated.

Public message forums and file libraries can also be shared over NovaNet. One server is designated as the "master" node for each particular forum or library. All other nodes that subscribe to a forum or library pass their messages through the network to the appropriate master node, which distributes all of the messages to all of the other servers.

A critical feature of NovaNet is that ResNova, developers of the NovaLink Professional host software that is used on the network, also administers and maintains the network hubs which act as centers of distribution. ResNova also registers all NovaNet nodes and distributes an updated list of NovaNet nodes to all servers.

Companies that choose to use NovaNet *for their own business* communications can establish their own private point-to-point or hierarchical networks using the NovaNet system, allowing cross-country or worldwide corporate communications.

The **OneNet Member Network**, on the other hand, originates at OneNet Los Altos (CA) and is propagated throughout North America and Europe, claiming 90 systems hooked up through primary and secondary gateways. Total number of users, according to OneNet literature is a very approximate 25,000 to 40,000 people.

Unlike NovaNet, OneNet and all of those systems connected to it are volunteers without any formal ties to SoftArc or Apple Computer, but you need to buy FirstClass host software and an Apple

Computer to join the club. The base conferences available to a level one operator are FirstClass News, FirstClass Support, FirstClass Systems, FirstClass Admins, Modems, FirstClass Suggestions, OneNet Member, and Ask Apple. Over 75-100 conferences and a start-up logo indicating your board's OneNet membership are available to a level-two operator. Level-two operators also may publish or originate conferences for general subscription. A third level of the system, designed to function as pass-through feeds to lower-level systems, is planned for implementation by mid to late 1993. Hopes for regional super Hubs have been projected into 1994.

"We want to grow a Macintosh-based distributed network system that provides low-cost, high-quality access to information, tools, and community," asserts Scott Converse, executive director of the OneNet Member Network. "It's about creating an online, virtual community of people connected to share knowledge and resources. Our goal is to serve as one of the methods you can use to glue the various networks in the world together into the **OneNet**, our word for the ubiquitous global nervous system that's slowly forming around low-cost servers, networks, computers and the upcoming PDAs," states Converse.

Unfortunately, at this writing, the new breed of Macintosh host interface software programs are not modems, in that they do not have any common standards beyond ASCII, TTY, and ANSI that ensure interoperability. Funny thing, actually, that Apple let it get that far along. For it appears that, because of the idiosyncratic ways in which NovaLink and FirstClass implement their GUIs and internetworking gateways, there can be no mix-and-match, plug-n-play, seamless integration when world building with Mac-based BBS software.

That said, however, just as there are DOS networks like FidoNet, and UNIX networks like the Internet, we heartily applaud these efforts to establish Macintosh internetworking in its own right. It is certainly time for, and there is certainly room for a Macintosh-oriented network that every sysop or caller could tune into. But, when you imagine having to buy NBC's own brand of television

so you could receive and retransmit just NBC's network programming, it becomes clear that no matter what kind of high-minded non-profit spin you put on it, NBC, before all others, is going to benefit nicely. . . as long as they got Cosby.

ResNova Software, Inc., 16458 Chica Street, Unit #193, Huntington Beach, CA 92649; **(714)840-6082** (voice); **(714)840-8641** (BBS). OneNet Member Network, 4546 El Camino Real, Suite #127, Los Altos, CA 94022; **(415)948-5086** (voice and fax); **(415)948-1349** (BBS).

MAC BBS OF THE MONTH

Over the past year I have written exclusively about Mac-based BBSs that represented the new breed of graphical-based host software packages now available. However, I still catch no small amount of criticism for this capricious snobbery. Here-to-wit, let it be known that I repent and will widen my sights to include any Mac-based BBS for consideration in this section. Why? Here are my reasons.

1. That developers like TeleFinder, FirstClass, or ResNova offer a "user program" for use on a Macintosh and threaten same for the Windows-platform is a fine service to provide. But the fact of the matter is, a good seventy percent of my callers are DOS users. And, even Macintosh callers, until they download or otherwise acquire the user program are looking at a TTY or ANSI command-line-interface; so it better be a good one.

2. The factors that go into evaluating a BBS go far beyond the host software used. Admittedly, making it easier for beginners to get around is a credit to the software, as is making the sysop's administrative tasks more manageable. I maintain that a GUI interface can help tremendously. But it is not the beginning or end of the story. If interface were the only criterion, then the **WELL** would forever get two thumbs down, cause it looks and feels gawd-awful. Yet, the sense of place established on that system over a period of years goes far beyond interface.

So in this new spirit of I'll-look-at anything-once, I pass on to you, dear readers, the following information forwarded to me concerning **MacConnections BBS**, a Mac-based (cough) BBS located in America's heartland, Indianapolis, IN.

MacConnections BBS is a free public system dedicated to "local Macintosh support." It is FidoNet Node 1:231/480. Barry Skidmore is the sysop of a system built around a Macintosh II ci loaded with 32-Mb of RAM and a 240-Mb internal drive. He also uses a 12-inch monochrome monitor, a PLI 200 Turbo external hard disk, and a CD Technology Porta-Drive CD player that offers AMUG's BBS in a Box. Offering 1,200-through 9,600-bps access, Barry went first class all the way on the modems with Hayes ULTRA SmartModem 9600.

Running system 7.0.1, MacConnections BBS employs Second Sight 2.1 BBS software from Freesoft, makers of the popular White Knight telecommunications package. The system also hooks into FidoNet via Tabby 2.1 network mail software by Michael Connick.

Now for the sexy part. No, Mark, not the GIFs. For in addition to the 1.3 gigs offered on CD, MacConnections offers an interesting array of general files for downloading including specific sections for Ham, packet, and short-wave radio, and science related files. A full range of conferences are provided as well, including FidoNet echoes on the Mac, telecom, HyperCard, System 7, and short-wave and ham radio. Mac-oriented Usenet conferences include a wide array of the usual suspects including hardware, programming, digest, and announcements. Tidbits for the kids, too. Local private and public mail is available in addition to private FidoNet mail capability. A voting booth feature is used to poll callers on a variety of topics.

Overall, this appears to be a fairly well-developed piece of BBSing that deserves calls from Macintosh and DOS users alike, if only to check out all the radio-oriented files. So dust off your old TTY-communications software and get in line. Thanks to Barry for passing this info along: MacConnections, (317)290-1762 BBS; (317)298-3532 voice.

ATTENTION MAC SYSOPS

If you have a Macintosh-based BBS (even if it isn't GUI), let us know who you are and what you think you're doing that makes your board special. To make things easy for everyone, mail a diskette containing your user program with a preset account, time allotment (1-hr for editorial deadbeats like me should be plenty) and password to the address below so I can log on and take a look around your system. Also include a text-file that describes your board and any interesting places on it you think are special. I'll try to visit as many boards as possible and write about the most interesting ones I can find. MAC BBS, 2069 Highland Drive, Concord, CA 94520.

[Bill Gram-Reefer, based in Concord, California, is president of WORLDVIEW, a public relations firm specializing in connectivity and communications. As the former editor of SHOWPAGE and associate publisher of Western MicroMarket, Bill has been writing about Macintosh computers since 1984. He operates WORLDVIEW BBS (510) 676-2919, running on a Macintosh computer. He can also be reached via his new nose-turned-up-at-you Internet address: wk05156@worldlink.com]



quality levels of compatible game cartridges through their supervision, but anybody with a handle on basic human motivations could see the game makers' real goal was making high profits on the software development work of others.

Nintendo is credited with being the first to set up such a regime, centered on its wildly successful original video game console. Its main method for preventing competition by outside software developers was fairly clever. It developed a novel software-based locking mechanism, called "10NES", which all game cartridges needed to engage to operate on the Nintendo console. The lock was not impossible to copy, but the real protection lay elsewhere - it was copyrighted! Anybody who marketed a Nintendo-compatible game cartridge without a license from Nintendo was slapped with an infringement lawsuit.

Nintendo won all the early legal rounds against its would-be competitors. No matter that every time, the defendants shouted that Nintendo was misusing its copyright to monopolize the software used with its game consoles. The trial court judges, many of them quite tolerant of predatory commercial practices, bought Nintendo's excuse about quality control and treated these cases as plain vanilla copyright infringements, making Nintendo the winner. In the most recent case however, *Atari Games Corp. v. Nintendo of America Inc.*, a federal appellate court less impressed by Nintendo's raw aggression announced an important software law principle

LEGALLY ONLINE

A SURPRISING REVERSE ON REVERSE ENGINEERING

by Lance Rose

For years, the home video game manufacturers have quietly maintained an iron grip on the development of software compatible with their systems. They would set up arrangements where no one was allowed to develop compatible software except under license. Standard license terms required the developers to turn the finished software over to the game makers for incorporation into official game cartridges, which would then be sold back to the developers for sale to the public. The game makers always claimed this was done to keep up the

which will ultimately lead to the end of the kind of software industry dominance exercised by Nintendo.

Atari was an authorized Nintendo game development licensee, but chafed under the requirement of handing over a large share of its profits to Nintendo. It surreptitiously sought to reverse engineer the 10NES code, so that it could develop game cartridges outside of the Nintendo license that would be fully compatible with Nintendo's console. This effort, involving chip mask peeling and object code decompilation, proved very difficult, but after obtaining a copy of the Nintendo code deposited with the Copyright Office, Atari finally pieced together the secrets of 10NES and developed a compatible program. Atari then put out unlicensed but compatible cartridges for Nintendo games, and soon found itself in court with Nintendo.

Based on comparison of Nintendo's and Atari's programs, it was highly doubtful that the Atari program violated Nintendo's copyright. However, Nintendo had another kind of copyright claim: that Atari had violated Nintendo's copyright in the 10NES code by making copies of the code in the process of reverse engineering it, even if those copies were used only for study purposes. The trial court bought this argument, and declared Nintendo the winner.

The appellate court in Washington, D.C. didn't accept this argument by Nintendo. Instead it declared, for the first time by a high federal court anywhere, that making software copies as necessary to reverse engineer another's program is perfectly legal. Although making unauthorized copies would ordinarily infringe the copyright in the copied software, it will be deemed a legal "fair use" when done for the purpose of reverse engineering. As the court said:

When the nature of a work requires intermediate copying to understand the ideas and processes in a copyrighted work, that nature supports a fair use for intermediate copying. Thus, reverse engineering object code to discern the unprotectable ideas in a computer program is a fair use.

This statement harks back to the basic

trade-off embodied in the Copyright Act. Creators of copyrighted works have the right to prevent unauthorized copying of the expression contained in those works, but in exchange, any ideas in their works are open to the public. Permitting software owners to lock up the ideas as well, by distributing their programs only in object code form and permitting them to sue reverse engineers for copyright infringement merely for producing research copies of the code, would deprive the public of its half of the copyright bargain. Accordingly, the production of such copies will be exempt from infringement as a fair use.

The case was not free of disappointment, however. In a truly bizarre turn, Nintendo managed to win this particular court battle, even as it lost important ground in the long term war over reverse engineering. Right after its ringing confirmation of the fair use right to reverse engineer, the court denied Atari the benefit of its holding because Atari had bent the truth somewhat in obtaining a study copy of the 10NES code from the Copyright Office. Copyright Office regulations required those requesting copies of software deposited by copyright registrants to state their reasons for requesting the software. Atari had stated its reason as anticipated litigation, though its immediate reason for the request was not litigation itself, but to use the software copy to aid in its reverse engineering project. This small falsehood, according to the court, caused the software to become an "unauthorized copy" which was "purloined" by Atari from the Copyright Office. Indignant with outrage, the court stated that although reverse engineering is okay now, this does not permit Atari to "commercially appropriate" copyrighted source code through illicit means, and Atari could not claim fair use in these circumstances.

This holding makes little sense. Grand principles of fair use aside, the court chose ultimately to spotlight Atari's failure to be scrupulous in observing a minor bureaucratic regulation by entirely denying fair use treatment to Atari. This holding favoring Nintendo put a small cloud over the case, sending the message that reverse engineering might be okay, but you'd better be a very good

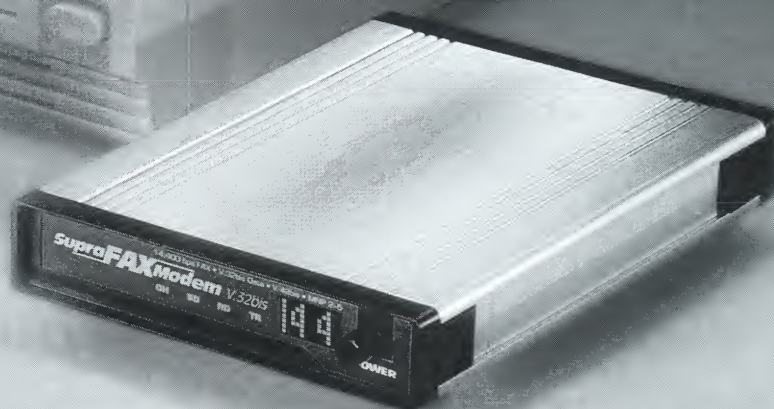
little boy if you want to stay out of trouble (It also shows what a crap shoot litigation can be even when you have the best of cases). It also raised the disturbing thought that without even claiming its software is a trade secret, a company could use copyright law to keep others from studying its software to learn how it works. The better approach would have been a slap on the wrist to Atari, and a suggestion to the Copyright Office that they should freely provide copies of deposited software to anyone who says they want to study it for reverse engineering purposes.

Luckily, however, Nintendo's major video game competitor and copycat, Sega Enterprises, lost its own similar case in the federal appellate court in California a month later, in *Sega Enterprises Ltd. v. Accolade Inc.* This time, the same fair use/reverse engineering principle announced in the *Nintendo* case was not only endorsed by the Sega court, but was used to hand would-be monopolist Sega a loss. Sega, like Nintendo, used proprietary interface code to assure that only Sega-licensed game cartridges could be used with its consoles. And Accolade, like Atari, was a licensed developer of Sega game cartridges that sought a way to keep more of the profits by developing its own Sega-compatible cartridges outside the license, through reverse engineering that required the production of interim copies of Sega software strictly for study purposes. Accolade managed to accomplish its reverse engineering without purloining any software from the Copyright Office, and the court held that Accolade's game cartridges were entirely protected from infringement claims by fair use.

With the *Sega* decision, fair use treatment for reverse engineering of software is now firmly established under copyright law. Two of the most respected federal appellate courts, officially referred to as the Federal Circuit and the Ninth Circuit, have grounded this approach in sound legal analysis, and in one case it was used to entirely excuse a technical copyright infringement arising from production of intermediate study copies. Thus, not only have the efforts of video game manufacturers to establish hardware-specific fiefdoms stalled out in the upper reaches of the

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federal court system, but they have resulted in a new breath of freedom in the larger field of software development. Software producers can now learn more freely from their competitors' products and more effectively advance innovation in the industry, in contrast to producing a stream of competing black boxes containing perpetually reinvented wheels. Investment should buy greater advances in technology, productivity should increase.

In a related development, "copyright misuse" as a legal defense against software infringement claims also seems to be picking up some steam. Based on the well-established defense of patent misuse, it holds that copyright enforcement should be denied where a company does not merely seek to enforce its copyright, but wrongly tries to use its copyright as a lever to gain a legal advantage beyond the exclusive rights spelled out in the Copyright Act. It first gained attention in the 1990 case *Lasercomb American v. Reynolds*, where the court refused to enforce a software vendor's license provision prohibiting the licensee from selling competing software products. If the licensee's competing software does not violate the copyright in the vendor's software apart from any license, the vendor cannot use a non-competition condition in its software license to turn it into an infringement.

In *PRC Realty Systems v. National Association of Realtors*, decided last August, the provider of an online realty listing service had designed the service to prevent users from printing out the listings at their terminals. Anyone wanting a printout could only buy it from the listing service provider, which created bound copies for a fee and delivered them by mail. One of its licensees, which agreed in the license to use best efforts to promote the listing and publishing service, developed and marketed a desktop publishing software package that permitted users of the service to capture the listings at their terminals and make their own printouts, thus bypassing the listing provider's printing-and-mailing racket. The listing service provider sued, among other things, for copyright infringement. The court, echoing the *Lasercomb* decision, threw out the claim as copyright misuse, stating that to en-

force the copyright in this kind of case would prevent software licensees from implementing their independent ideas, and defeat the limits built into the Copyright Act.

The new fair use right of reverse engineering, and the defense of copyright misuse, stand as examples of how copyright doctrines can be adjusted to meet the needs of new technologies and new kinds of product markets. Progress is slow, there can be reverses along the way, and some poor companies have to spend an awful lot of money in order to achieve these results. But these developments demonstrate that we do not need to throw out the copyright laws to achieve a wider and more effective diffusion of technology throughout society, as heartily recommended by those on the fringes of the commercial software industry or at the bottom of its food chain. Sometimes, if you just stay patient, things will turn in the right direction all by themselves.

[<BI>Lance Rose is an attorney practicing high-tech, computer and intellectual property law in the New York City area, and is available on the Internet at elrose@well.sf.ca.us and on CompuServe at 72230,2044. He works with shareware publishers, software authors, system operators, technology buyers, interactive media developers, on-line database services and others in the high technology area. He is also author of the book SYSLAW, a legal guide for bulletin board system operators, available from PC Information Group (800)321-8285. - Editor<D>]

INTERNET NOTES

DENVER FREE-NET INTRODUCED

Colorado has actually been quite progressive with regards to electronic networking. Progress is never fast enough when it's in your own back yard, but realistically Colorado is in many ways light years ahead of much of the country

when it comes to networking. The **Colorado Alliance of Research Libraries** (CARL) has become a model for automating libraries and putting library card catalogs online. For over six years Colorado residents have been able to access most of the libraries statewide via a free local modem call. It doesn't require registration or even a logon name to access the service, though I library card can come in handy when accessing some of the databases that aren't open to those without one.

Today CARL sports over 40 libraries and some **5,868,078** records. In addition, they've added a number of specialized indexes and reference databases to the system. One of our favorites is the database of **Internet Resources** that allows you to look up services using keyword searches. But the service also has magazine and periodical indexes, and information on the Denver area.

The system runs on a fourteen processor **Tandem CLX** minicomputer with over **1500** public terminals, **16** dialup lines operating at 2400 bps at **(303)758-1551**, and free access via Internet telnet login at **pac.carl.org** or **192.54.81.128**. Online storage includes some 23.2 GB spread across 72 hard drives AND a jukebox system with that much or more again available.

The CARL system has become such a model for libraries, that a big part of the business CARL is in is installing systems for other libraries around the country. The Information Ohana system at the University of Hawaii at Manoa uses the CARL system and the Atlanta-Fulton Public Library just selected CARL in a competitive bidding process to do their next generation integrated automated library system. Systems in Los Angeles and Maryland have also recently been installed. The CARL staff has grown from **16** in 1990 to **49** by the end of 1992. CARL Systems, Inc., 3801 E. Florida, Suite 300, Denver, CO 80201; **(303)758-3030** voice; **(303)758-0606** fax; **(303)758-1551** data; Internet: **info@carl.org**

While Colorado sports an unusually educated and technically oriented population, some of the credit for Colorado's forays into networking have to go to the **Colorado Advanced Technical In-**

stitute (CATI). This was actually established by the state legislature early on in 1986 to foster high-tech industry in the state. One of the offspring of CATI was **Colorado SuperNet**. Originally setup under the National Science Foundation Network program to connect supercomputers and computer science departments across the state to the Internet, Colorado SuperNet has evolved, is evolving, is somehow changing, from a state public entity into a self supporting service group that could eventually become an independent corporation. Today, it not only connects schools and universities to the Internet, but businesses large and small and even individuals across Colorado to the Internet. They offer a wide array of connection types from individual shell accounts on their SunOS network to UUCP connections, SLIP connections, and full IP links at up to T1 speeds. It offers some of the lowest cost connections to the Internet in the country, and we think they run one of the tightest ships in the Internet shipping business. Boardwatch makes the connection through SuperNet. For more information, contact info@csn.org.

But K-12 education in Colorado has not done particularly well at getting the younger population online. We've found most of the K-12 educators to be almost obnoxiously vented with the Not Invented Here syndrome whenever it comes to telecommunications issues. A few brave and lonely classroom teachers have put up bulletin boards and manned communications projects, but generally, K-12 has lagged far behind University and library activity in the state. Enter **ACCESS Colorado**. This is a new program headed by Susan Fayad (sfayad@csn.org) to establish statewide access to schools and children throughout the state. While the Denver area is one of the largest local dialing areas in the Country, Colorado contains a wide expanse of rural areas with small towns and mountain villages largely isolated from the metro area in the east. Access Colorado establishes local access points, and in some cases 800 numbers within the state. Callers can then access CARL and Colorado SuperNet with a local call. The program is just now getting off the ground.

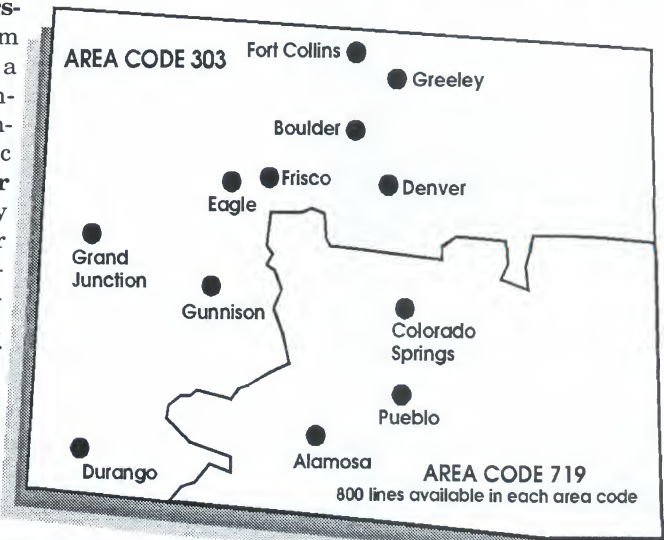
Concurrently, the **Colorado Health Sciences Center School of Nursing**, with funding from the **Colorado Trust**, a Denver based philanthropic organization, unveiled a new free public service titled **Denver Free-Net** on January 12th. Patterned after the Free-Net community bulletin boards pioneered by Dr. Tom Grundner, founder of the Cleveland Free-Net, Denver Free-Net will offer community news and communication free to all with the sense to dial. Denver Free-Net runs on a SunOS system using the same **FreePort** Software developed by Case Western University for the Free-Nets in Cleveland, Cincinnati, Peoria Illinois, and Youngstown Ohio. This network of community Free-Nets now operates loosely under the banner of Grundner's **National Public Telecomputing Network**.

Denver's Free-Net is the brainchild of project director Dr. Diane Skiba of the UCHSC School of Nursing. Skiba wrote the grant for Denver Free-Net based on her experience with NurseLink, a local BBS for nurses.

For dial up callers, Denver Free-Net initially sports five lines at **(303)270-4865**. Callers will be greeted with the Unix login prompt and new callers can enter **guest** at the prompt for immediate access to the system - no password required. Once on the system, you can register by entering name, address, telephone number and you will be assigned an account on the system. This is one area we find fault with the Freeport software. I've been known as Jack Rickard for as long as I can remember. I don't think I will ever quite adjust to being called **ab312** - at any price.

Once you have an account, you receive full access to the system. Despite the Unix heritage, the Freeport software provides a very easy to use, if spartan, interface. The basic menu is patterned after a community, with different build-

ACCESS COLORADO



ings housing different services. The ARTS building, for example, sports information on the Denver Symphony, the Museum of Natural History, the Denver Chamber Orchestra, and other local cultural attractions.

With the roots this system has in the University of Colorado Health Sciences school, it is not to surprising that the system has quite a bit of health information. But we found substantial resource in the listings of support groups for victims of HIV/AIDS, Alzheimer's, and Parkinson's Disease. There was also a full statewide listing of hospitals, and a senior support center.

The Teleport provides links to other systems on most Free-Nets and the Denver system lacked links to the other systems in Ohio. But it did offer a connection to the **University of Michigan Weather Underground** system in Ann Arbor. Reviewed in earlier issues of **Boardwatch**, this service provides one of the best free weather reports available online for cities around the country.

The system is really a full featured Internet site. In addition to the five dialup lines, Denver Free-Net sports another 15 ports onto the Internet through Colorado SuperNet. In this way, callers from around the state can dial into SuperNet through Access Colorado, and then telnet to Denver Free-Net at freenet.hsc.colorado.edu (140.226.1.8).

AQUILA BBS

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Our organization and the latest programs make our file areas the most popular around. These are just a few of our most popular categories available:

Diagnostic Utilities
System Enhancements
File Organizers
Word Processing

Computer Games
Music and Midi Sound Files
Computer Animations
CAD Drawing Utilities

Business - Finance - Tax
Novell and Lan Utilities
Database
Programming

Icons - Icon Managers
Wallpaper - BMP's
Multi-Media Related
Fonts - Font Utilities

New User Information

All first time callers receive by mail, our printed 'New User Information' and 'E-Mail Conference Directory' guide, as well as a 'Quick Command Guide' to help you get the most out of Aquila. The new user information covers system services such as answers to commonly asked questions, USA Today, Boardwatch Magazine, and Electronic Mail off-line readers. The 'Quick Command Guide' is a desktop lookup for using Aquila commands.

Aquila Starter Kit

Callers that are new to modem communications will find 'The Aquila Starter Kit' a great time-saver. Easy for the beginner and helpful for the expert! This \$39.95 kit includes the following:

Procomm (communications program)
Full documentation for all BBS commands
Off-line file browsing program

Our complete file listing on floppy disk
Off-Line E-Mail Reader
Three month basic membership

Around The World E-MAIL

Over 450 Conference Topics

We currently echo to and from ILink, RIME, Fido-Net and Throbneth with more to come in the near future. You can get virtually any question answered here and join in on lively discussions with people from across the country and around the world. We also publish our own 'E-Mail Directory' that is sent to all users of Aquila BBS. This directory lists all of our conferences by category and gives a brief description of the topic of each one. Here is a small sampling of over 450 interesting topics that we offer:

General Discussion
Computer Related

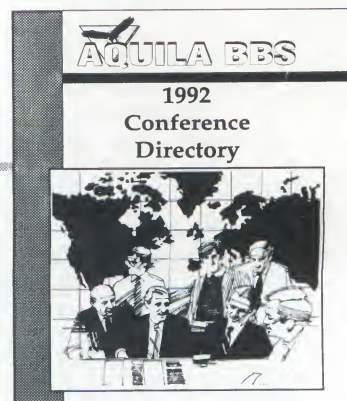
Vendor Support
Programming Languages

For-Sale
Current Events



The AQUILA BBS Team (Left to right: Kevin & Kristy Behrens, Steve Williams, Chris Babb)

AQUILA BBS
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New User Information



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This does provide the world access to Denver Free-Net, but the reverse is also true. Anyone registered on the system, entirely free of charge, gains their own Internet e-mail address. It's not a fancy one or one easy to remember, but it works quite well. Ours is then **ab312@freenet.hsc.colorado.edu**. The e-mail functions are quite well explained, easy to use, and at the same time offer a pretty good selection of power tools to saw up those e-mail messages with - including an online spelling checker, editable signature files (files containing information about you and your contact information normally appended to every e-mail message you send) and even aliases and forwarding. You can conceivably create a forwarding address if you are going to be in another city and the system will forward mail to you at your new Internet address **THERE**.

The system sports file uploads and downloads and each caller is given their own work file area. We also found it a bit unexpected that the system sports a feature they call the **Public Square**. This is basically an online chat function allowing callers to chat in real time. We think Dr. Skiba will soon discover that local BBS people can tie up a five line chat system pretty thoroughly. But it is a nice touch.

We were thoroughly charmed with a feature we understand now appears on all the Free-Nets. It's titled the **Freedom Shrine** and it contains the full text of the **Constitution of the United States**, with the **Bill of Rights**, all amendments to the Constitution, and the letter George Washington sent with it to the Congress. There was also an area listing nearly 20 post Constitution documents such as the **Gettysburg Address**, **President Lincoln's Second Inaugural Address**, ML King's "**I Have a Dream**" speech, The **Monroe Doctrine**, and many more. There is also a PRE Constitution documents area that ranges back to the **Magna Carta** of 1215, the **Mayflower Compact**, and *many more there* as well. The result is virtually all of the revered documents pointing toward, and subsequently in support of our rather unique heritage as a democracy under the principle of individual liberty. It is a very effective Freedom Shrine at that.

Academics cannot seem to restrain themselves from falling into a kind of verbal diarrhea of fairly grandiose self-aggrandizement whenever they ponder the implications of actually doing something that might prove useful. And this mildly cloying preening tone is more than abundant on the Denver Free-Net. But for all that, we can see why they might feel a bit charmed with themselves. The service is rather marvelous in that it offers every resident of Colorado with the strength to dial all ten digits a fairly complete and free access to the global Internet, and in conjunction with Access Colorado, this free access is available very nearly from every remote corner of the state. When you consider it, this is actually no mean feat. With participation, it actually could become a focal point for community communication and information.

The most valuable element to this particular Free-Net is the way it fits into a greater Colorado Networking puzzle that includes Colorado SuperNet, Access Colorado, and the Colorado Alliance of Research Libraries to weave a fairly cohesive networking tapestry spanning the state. And we must applaud the artful planning this obviously takes. It will inevitably lead to corollary systems in cities such as Boulder, Pueblo, etc. and ultimately, Colorado could become one of the most networked states in the country an - altogether appropriate state of affairs given Colorado's vast rural areas, relatively educated population, technically inclined work force, and need for relatively clean high technology industry. We would offer it as a model for other states to emulate. For more information on Denver Free-Net, contact system administrator Drew Mirque at University of Colorado Health Sciences Center, School of Nursing, 4200 East Ninth Ave., Campus Box C-288, Denver, CO 80262; (303)270-4300 voice; (303)270-8660 fax; (303)270-4865 data.

OKLAHOMA UNIVERSITY BBS - CONNECTING DOS-BASED BULLETIN BOARDS TO THE INTERNET

Ronnie Parker first took an interest in bulletin boards in 1984. As a data communications technician in charge of the telephone system at Oklahoma University, he put up an RBBS-Pc bulletin board for telephone switch technicians to swap information about the trade - divestiture being a hot topic at the time. The switch techs didn't fall swoon to the idea, but the local PC enthusiasts did and Ronnie wound up with the BBS bug in a pretty big way.

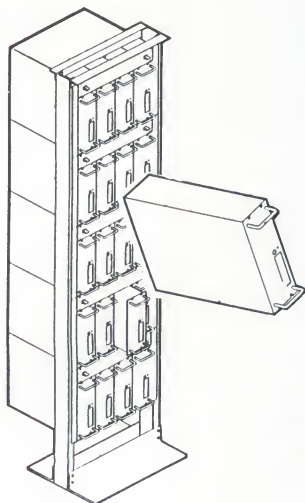
Today he is the leading data communications tech at OU in charge of the entire campus Internet backbone. But he still carries a fascination for bulletin boards and the combination of BBS and Internet interest may prove a boon to the BBS community at large. Parker has made no small headway in marrying the two worlds.

The OU BBS today uses the 64-line TBBS multiline software running on a 40MHz 386 system with 4 CD-ROM drives, and several Gigabytes of hard drive space. Parker actually runs **FOUR** separate bulletin boards on the same system by taking advantage of a peculiar feature of TBBS that allows you to direct callers to a specific BBS at logon based on their userlog settings. As a result, he can run quite private bulletin boards on the system for the OU Library School, the Climate Survey, and the OU College of Education as well as a completely free BBS open to the public in Oklahoma. The three private BBSs are all funded by the individual college departments they serve, and the public system is more or less an economic side effect.

The local calling area around the University is quite large - nearly 2500 square miles and the public system has caught on. Callers dial in to one of the eight telephone lines to chat in real time conferences, download files from the extensive shareware collection, or play one of several quite colorful online games the system sports. They also carry the

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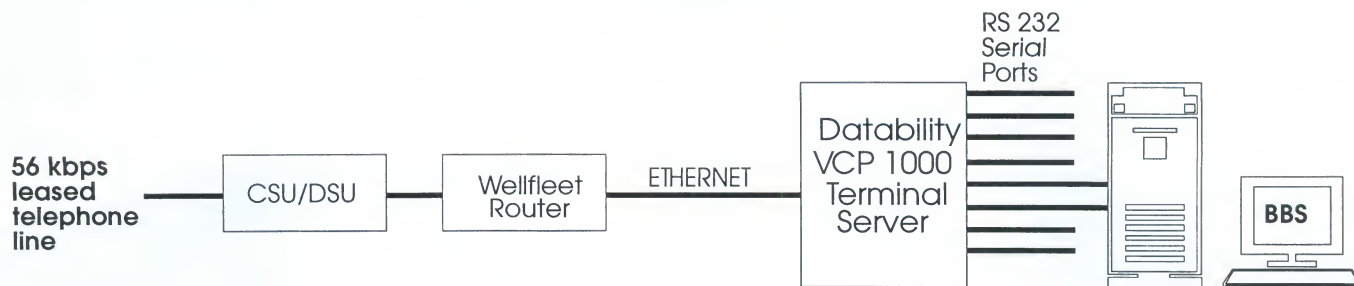
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OKLAHOMA UNIVERSITY TBBS CONNECTION TO THE INTERNET

USA Today daily newspaper, and our own *Boardwatch Magazine* online. The system features some very artfully done ANSI menus.

But what caught our eye was something else. Ronnie Parker has set up one of the first TBBS systems ever to allow telnet access over the Internet. By entering **telnet oubbs.telecom.uoknor.edu** or **telnet 129.15.3.15** from any Internet shell account anywhere in the world, you can access one of two ports connected to the BBS and logon as if you had dialed into the system - more or less. The result is a regular constituency of international users who can logon from England, Finland, and elsewhere at essentially no international long distance telephone cost.

The system is not as smooth as a regular dialup due to the packet nature of the Internet Protocol. And file downloads don't work quite the same as a dialup system - the only protocol that appears to work well at navigating the 7-bit internet packet link is KERMIT. In dialing into our Colorado Supernet shell account and telnetting over to the OUBBS, we found we could download files at about 145 characters per second - using a 14.4kbps V.32bis modem. So for heavy file sucking, you may be better off to dial the service directly at (405)325-6128. Four of the dialup lines feature US Robotics 14.4 modems while the other four use Twincom 14.4kbps modems. But for browsing about, chatting, playing games, the OU BBS is one of the most colorful BBS services on the Internet. No plain ascii UNIX

minimalist presentation - you get the full IBM ANSI color screens, play games, chat with other users, and if you must, download a few files with KERMIT.

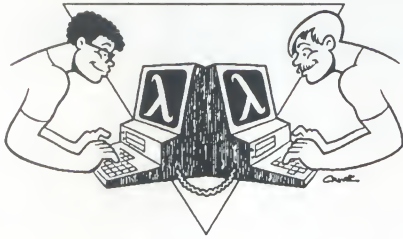
The system uses a device termed a "terminal server" to make the link between a DOS BBS system and the campus network backbone. These devices are actually for the purpose of connecting dumb terminals to an Internet Local Area Network. But by connecting the terminal server RS-232 serial ports to the Digiboard serial ports on the TBBS system with null modem serial cables, and connecting the **Data Terminal Ready** line from the terminal server to the **Carrier Detect** line on the BBS serial port, Parker is able to allow telnet logins from the Internet. The terminal

server connects to the campus network using a standard ethernet port.

The particular terminal server used is the **Datability VCP1000 Communications Server**. This chassis (\$1000 list) accommodates an Ethernet TCP Network Interface Card (\$1499 list) on the one side and up to four asynchronous serial port cards on the other. Serial cards are available in 8-port (\$1299 list), 16-port (\$2099 list), and 32-port (\$3199 list) configurations for up to 128 serial ports total. Using two 32-port asynch serial cards, the server could connect up to 64 simultaneous telnet logins to the TBBS system. According to Parker, the OU BBS currently has just two serial connections to the TBBS system in operation.



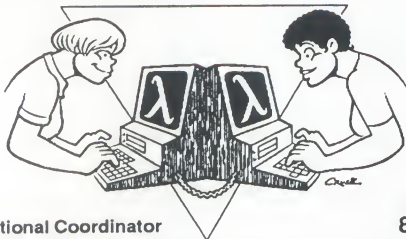
Datability VCP100 Terminal Server



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The accompanying diagram shows the basic setup. A full IP connection to the Internet usually involves a leased telephone line to the Internet service provider. A device termed a **CSU/DSU** (Channel Service Unit/Digital Service Unit - typically \$600-\$700) services the line much after the fashion of a modem - usually at a data rate of 56kbps but in some installations at T1 rates as well. A second device termed a router is connected to the CSU/DSU and acts to read IP packet addresses and forward packets to their intended destination. OU uses a router from Wellfleet. Routers are relatively expensive - typically starting at about **\$3000**. The router is connected by ethernet cable to the communications server. Datability is working on an internal router card for the VCP 1000

So connecting a TBBS system, or for that matter any DOS BBS system to the Internet is possible without running a UNIX system intermediary. But the cost is pretty prohibitive at this point. A

basic 8-port Datability Communications Server carries a total list price of **\$3798**, though distributors often discount this by as much as 25%. Router's are typically available for around \$3000, and a CSU/DSU is typically around \$700. A leased 56 kbps telephone line is typically \$400-\$600 per month, and a full IP connection to the Internet usually starts at about \$7500 per year. The bottom line is that you can do a full IP connection to the Internet for about \$7000 in equipment and \$1200 per month in fees. Naturally, University departments and companies that already have routers, leased lines, and IP connections can use these communications servers to put a DOS BBS online on the Internet for a more reasonable \$3000 or so. Datability, One Palmer Terrace, Carlstadt, NJ 07072; (800)456-7844 voice; (201)438-2400 international; (201)438-2688 fax.

PRIVACY AND ANONYMITY ON THE INTERNET.

by Matthew Rapaport
mjr@netcom.com

I recently discovered a new (to me) kind of service now available to those with Internet accounts. It is called a Privacy, Anonymity, or Alias Server, I call them 'Aservers' for short, and they act to forward electronic mail anonymously.

There are some situations where it may be desirable to send anonymous electronic mail. Suppose you were an engineer with a large Government contractor. You find some monkey business and you want to blow the whistle, but for the sake of your family (or other interests), you don't want it known that YOU blew the whistle. You could post your whistle blowing evidence all over the world in a few hours via the Usenet, but the world would also know from whom the revealing message came.

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NATIONAL ACCOUNTS AND RETAILERS WELCOME



Enter the Aserver. Instead of sending your message direct to the Usenet, you send it to the Aserver along with instructions to pass it along to specified newsgroups. The Aserver removes all the header data your message accumulated on the trip between your site and the Aserver. By eliminating this, and the original From: information, the Aserver has covered your message's tracks. It then constructs a new set of headers that make it appear as though the message originated at the Aserver with a meaningless From: line (for example A239). To the newsgroup that reads you, you are now **A239@Aserver.what.ever.**

If a user replies to your message, the Aserver connects the alias (A239) with a real user name (**mjr@netcom.com**) and sends you the reply. It also "Aliases" the respondent (automatically), so that you do not know who he/she is unless they tell you in the body of their message. Replies from you go to their alias, and thence to them, etc. As far as it goes, the system works. The whistle blower is now anonymized as far as newsgroup readers are concerned, but there are some problems.

For one thing, your message may travel through dozens of machines on its trip from your site to the Aserver. Your sensitive material can be intercepted and linked to you anywhere along this chain. At least one Aserver I've found addresses this concern by supporting automatic public key encryption/decryption of your messages, and their replies. PGP, reviewed in the Feb. 1993 issue of Boardwatch and widely available in the file **PGP21.ZIP**, has become the defacto international Internet standard for public key encryption. Here's how it works.

You send a special message to the Aserver that says you want to register your public PGP key in the Aserver's database. The Aserver responds by giving you an alias corresponding to your key registration, and a copy of its own public key which you keep. Now when you want to send a message through the Aserver, you first encrypt it in **their** public key. Only they can decrypt it, so it is safe from prying eyes all the way along the trip. Replies to your message

are encrypted at the Aserver in your public key. Since only you can decrypt this, the message is again safe on the trip from the Aserver to you. An interceptor knows some message is going to you, but not what it contains. If correspondents on each side of a mail link have all registered their public keys with the Aserver, then messages will be encrypted end-to-end, except for the encryption translation that takes place on the Aserver.

Ok so far, but the weak link is the Aserver! Their database is potentially compromising to everyone. A solution to this problem is available by using two Aservers with special characteristics. One, call it Aserver-X, must support redirection of mail. That is you must be able to send it mail (which gets aliased) and then forwarded to another e-mail address. This function was not available on early Aservers which were set up dedicated to some Usenet newsgroup, but it is now. The second server, call it Aserver-Y supports encryption/decryption. Now you use your account on Aserver-X to register your public key on Aserver-Y.

Once you do this, you can send encrypted messages through Aserver-X, which aliases you, to Aserver-Y where they are decrypted, **and** you are aliased a second time, before your message is sent along to its final destination (possibly re-encrypted).

Returning replies go first to Aserver-Y because of the second Alias. This server encrypts the reply in your registered public key, strips its alias for you, and sends it along to Aserver-X, your registered alias address. Aserver-X now takes the traffic, de-aliases it, sending it back to you, still encrypted! By using this technique, neither Aserver alone can compromise you. Aserver-X knows who you really are. They have your real address in their database, but they don't know what you are saying in the traffic you pass through them because it is encrypted for Aserver-Y. Aserver-Y knows what you are saying in your messages. They have the key that unlocks your messages **to** them, but they don't know who you really are! All their data base shows is that your public key belongs to **A239@Asever-X!**

While this is possible now in theory, I'd like to prove that it really works. I had found two Aservers that might work together in the necessary way, but the first (my Aserver-X) mangled the headers of the PGP key I sent through it to Aserver-Y. The system administrator at Aserver-X recognized the problem and the potential of what I was trying to do. Before he fixed the problem, however, my Aserver-Y was shut down by its regional network after getting complaints from NASA regarding mail volumes and a philosophical (read: political) disagreement over the goals and purposes of the research networks and their attitude toward aliased mail in general.

I'm also interested in who is using these Aservers (I can imagine, but I'd like to gather some statistics). Right now I am collecting data and will have something more to report on this in the future.

For further information send an e-mail message to **help@anon.penet.fi**. It doesn't matter what, if anything, you put in the body of the message. It will automatically respond with an e-mail message back to you containing documentation on the use of this alias server.

There is also a widely read mailing list used to discuss alias servers, cryptography, and privacy on the Internet. To subscribe send mail to **cypherpunks-request@toad.com** with the subject "subscribe". To send mail to this list once subscribed use: **cypherpunks@toad.com**

*[Matthew Rapaport describes himself as a "Philosopher/Programmer At Large." He is also the author of the book *Computer Mediated Communications* published by John Wiley and Sons. Rapaport and can be reached either at **mjr@netcom.com** or **70371.255@compuserve.com** - Editor]*

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NEW E-MAIL ADDRESS DIRECTORY ANNOUNCED

The National Science Foundation has awarded a contract for an Internet-wide directory system to list electronic mail addresses, hosts, ftp sites, servers, and numerous other Internet services. The service will include a **CCITT X.500** e-mail address database, electronic "white pages" and "yellow pages" for the Internet. The **\$12 million** contract was characterized as a "cooperative agreement" in that it goes to three main contractors, AT&T, General Atomic's CERFnet, and Network Solutions, Inc. The new service will replace the existing Network Information Center (NIC) and the cooperative group will be known as INTERNIC.

The contract actually calls for directory and database services for NSFNET, the National Science Foundation national data network that is part of the Internet. The Internet is comprised of more than 6,000 computer networks that facilitate

collaboration among members of the research and education community. The Internet, and in particular NSFNET, is projected to serve as a basis for evolution to the National Research and Education Network (NREN).

Under the terms of the agreement, AT&T will develop and maintain a Directory of Directories which will serve as a pointer to numerous resources on the Internet. It will include lists of FTP (File Transfer Protocol) sites, lists of various types of servers available on the Internet, lists of white and yellow pages directories, library catalogs and data archives. The Directory of Directories will enable even novice users to obtain references to information they need through simple, easy to use interfaces. AT&T also will provide white and yellow pages type directory services, such as names of users, organizations and resources on the Internet, using X.500 technology, the current standard specification for distributed information storage and retrieval.

Initially, access to all services will be provided through several currently popular in-use interface methods; with time, it is anticipated that X.500 will become the primary method of access.

In providing these services, AT&T will work cooperatively with two other organizations: CERFNet, a General Atomic's project, which was awarded a similar agreement for information services, and with Network Solutions, Inc. (NSI), which was awarded a similar agreement for registration services. The three corporations will collaborate under a common concept called INTERNIC.

"We all feel intuitively that the domestic Internet and the distributed collaboration that it facilitates are rapidly creating a national 'workplace without walls'", said Steve Wolff, Director, Division of Networking and Communications Research and Infrastructure, NSF. "These three awards to geographically dispersed organizations for Network Information Services will both exploit and demonstrate the success of the network in enabling distributed collaboration."

"These directory and database services are essential components of the emerging international information infrastructure," said Erik Grimmelmann, Marketing Director, Internet/NREN, AT&T Data Communications Services. "This agreement marks an important step for the Internet as well as for AT&T because services such as these and the related ones to be provided by our INTERNIC collaborators will make the Internet even more useful than it is today."

The cooperative agreement is for a five-year period, with annual reviews. Under the award some \$4 million plus with go to CERFnet, \$5 million plus to Network Solutions, Inc., and slightly over \$2 million to AT&T. AT&T actually estimates the cost of the directory services it provides at over \$6 million and says it expects the NSF award to cover a third, AT&T itself will contribute a third of the cost, and about a third of the costs will be derived from "user fees". The exact definition of these user fees has caused a great deal of comment in discussion groups on the Internet. Technically, any access of the directory not originating within the Research and Education community is subject to fees. But as a practical matter, it would appear user fees will revolve around specialized database services, yellow pages "ads" for various services, and so forth. The user fees were part of AT&T's proposal, which was evaluated by an NSF review panel and approved by the NSF.

The bottom line is that within a few months we should begin to see some progress toward the development of directory databases available to look up electronic e-mail addresses.

AARL INFORMATION SERVER

The **American Radio Relay League** (ARRL) operates a useful Internet information service titled the ARRL Information Server. It provides a wealth of information about amateur radio issues, but it also illustrates the concept of an information server.

Servers on the Internet are devices that respond to inquiries automatically without operator action. The most fascinat-

ing aspect of servers is that they are accessible to anyone with an electronic mail address reachable via the Internet Domain Name System (DNS) electronic mail addressing. You can retrieve information from a BBS account, a CompuServe account, an account on AOL, or anywhere in the world where you can send and receive an Internet mail message.

You don't need to logon to anything, simply send an e-mail request and the information you requested shows up in your mail box a little later.

The address of the ARRL info server is, logically enough, **info@arrl.org**. The basic premise is that e-mail sent to this address is acted on. In the message body, you simply enter **HELP** on a line by itself. The server will reply with an e-mail message containing instructions on how to use the service. If you enter the command "index", they will respond with a file listing all the information files available from the server.

Finally, once you receive the index and select a file to retrieve, simply send an e-mail message with the command **SEND FILENAME** on a line by itself in the body of the message. The system will send the file by return e-mail. You can put multiple send file commands in a single message and terminate it with the command "**quit**" on a line by itself. For example, a message sent to **info@arrl.org** with the following text in the body will get you both the help file and the index.

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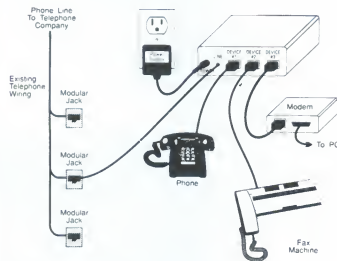
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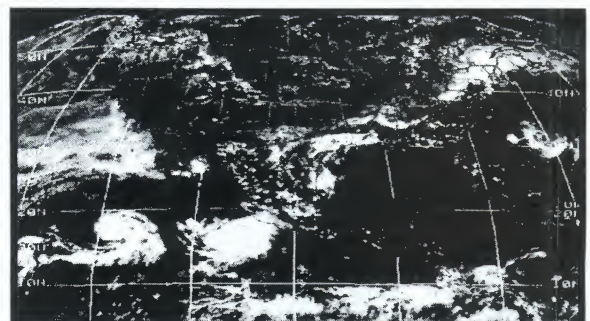
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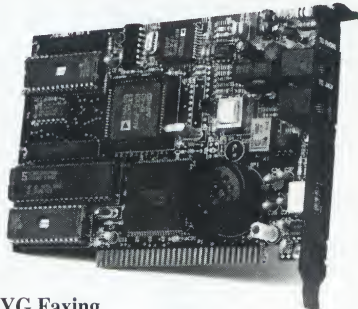
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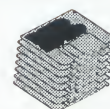
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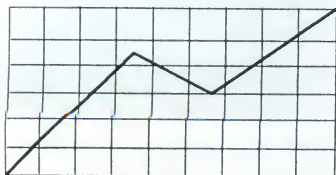
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MAJOR CHANGES AT THE ELECTRONIC FRONTIER FOUNDATION

Cambridge, Massachusetts
eff@eff.org
Wednesday, January 13, 1993

The Electronic Frontier Foundation was founded in July, 1990 to assure freedom of expression in digital media, with a particular emphasis on applying the principles embodied in the Constitution and the Bill of Rights to computer-based communication.

EFF has met many of those challenges. We have defended civil liberties in court. We have shaped the policy debate on emerging communications infrastructure and regulation. We have increased awareness both on the Net and among those law enforcement officials, policy makers, and corporations whose insufficient understanding of the digital environment threatened the freedom of Cyberspace.

But we've found that Cyberspace is huge. It extends not only beyond constitutional jurisdiction but to the very limits of imagination. To explore and understand all the new social and legal phenomena that computerized media make possible is a task which grows faster than it can be done.

Maintaining an office in Cambridge and another in Washington DC, has been expensive, logistically difficult, and politically painful. Many functions were duplicated. The two offices began to diverge philosophically and culturally. We had more good ideas than efficient means for carrying them out. And an unreasonable share of leadership and work fell on one of our founders, Mitch Kapor.

These kinds of problems are common among fast-growing technology startups in their early years, but we recognize that we have not always dealt with them gracefully. Further, we didn't respond convincingly to those who began to believe that EFF had lost sight of its founding vision.

Against that background, the EFF Board met in Cambridge on January 7, 8, and 9 to revisit EFF's mission, set priorities for the Foundation's future activities, adopt a new structure and staff to carry them out, and clarify its relationship to others outside the organization.

1. EFF'S CAMBRIDGE OFFICE WILL CLOSE.

We will be shutting down our original Cambridge office over the next six months, and moving all of EFF's staff functions to our office in Washington.

2. JERRY BERMAN HAS BEEN NAMED EFF'S EXECUTIVE DIRECTOR

In December, we announced that Mitch Kapor would be leaving the job of Executive Director. He wanted to devote more time and energy to specific EFF projects, such as **The Open Platform Initiative**, focusing less on administrative details and more on EFF's strategic vision. We also said that we would conduct a search for his replacement, appointing Jerry Berman as our Interim Director. Jerry's appointment is now permanent, and the search is terminated.



*Mitch Kapor - Co-founder
Electronic Frontier Foundation*

3. CLIFF FIGALLO WILL MAINTAIN EFF'S PRESENCE ON-LINE, AND WILL DIRECT THE TRANSITION PROCESS.

Cambridge Office Director Cliff Figallo will manage the EFF transition process, working out of Cambridge. He is now considering a move to Washington for organizational functions yet to be defined. In the meantime, he will oversee our on-line presence and assure electronic accessibility.

4. STAFF COUNSEL MIKE GODWIN'S ROLE TO BE DETERMINED

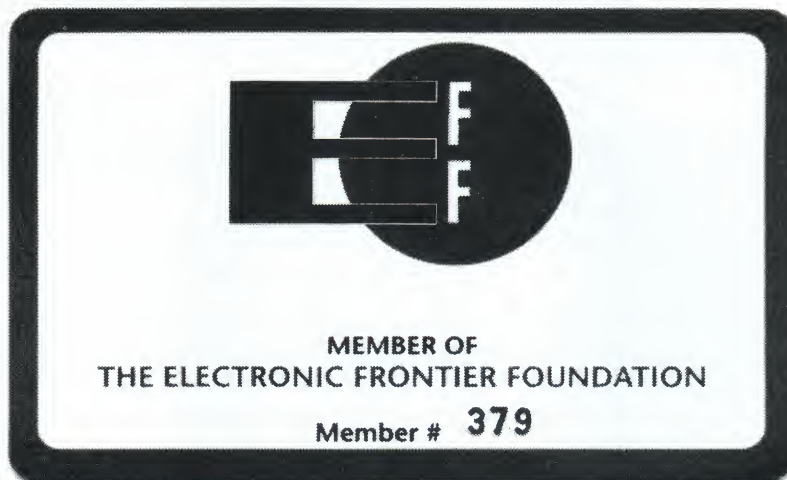
We recognize the enormous resource represented by Mike Godwin. He probably knows more about the forming Law of Cyberspace than anyone, but differences of style and agenda created an impasse which left us little choice but to remove him from his current position. EFF is committed to continuing the services he has provided. We will discuss with him a new relationship which would make it possible for him to continue providing them.

5. COMMUNICATIONS STAFFERS GERARD VAN DER LEUN AND RITA ROUVALIS WILL LEAVE EFF.

Despite the departure of the Cambridge communications staff, we expect to continue publishing *EFFector Online* on schedule as well as maintaining our usual presence online. Both functions will be under the direction of Cliff Figallo, who will be assisted by members of the Board and Washington staff.

6. JOHN PERRY BARLOW WILL ASSUME A GREATER LEADERSHIP ROLE.

John will replace Mitch Kapor as Chairman of EFF's Executive Committee, which works closely with the Executive Director to manage day to day operations. Mitch will remain as Board Chairman of EFF. All of the directors have committed themselves to a more active role in EFF so that decisions can be made responsively during this transition.



7. EFF WILL NOT SPONSOR LOCAL CHAPTERS, BUT WILL WORK CLOSELY WITH INDEPENDENT REGIONAL GROUPS.

We have labored mightily and long over the whole concept of chapters, but, in the end, the Board has decided not to form EFF chapters. Instead, EFF will encourage the development of independent local organizations concerned with Electronic Frontier issues. Such groups will be free to use the phrase "Electronic Frontier" in their names (e.g., Omaha Electronic Frontier Outpost), with the understanding that no obligation, formal or informal, is implied in either direction between independent groups and EFF. While EFF and any local groups that proliferate will remain organizationally independent and autonomous, we hope to work closely with them in pursuit of shared goals. The EFF Board still plans to meet with representatives of regional groups in Atlanta next week to discuss ideas for future cooperation.

8. WE CLARIFIED EFF'S MISSION AND ACTIVITIES

In undertaking these changes, the board is guided by the sense that our mission is to understand the opportunities and challenges of digital communications to foster openness, individual freedom, and community. We expect to carry out our mission through activities in the following areas:

POLICY DEVELOPMENT AND ADVOCACY.

EFF has been working to promote an open architecture for telecommunications by various means, including the Open Platform Initiative, the fight against the FBI's Digital Telephony wiretap proposal, and efforts to free robust encryption from NSA control.

FOSTERING COMMUNITY.

Much of the work we have done in the Cambridge office has been directed at fostering a sense of community in the online world. These efforts will continue. We have realized that we know far less about the conditions conducive to the formation of virtual communities than is necessary to be effective in creating them. Therefore, we will devote a large portion of our R & D resources to developing better understanding in this area.

LEGAL SERVICES.

We were born to defend the rights of computer users against over-zealous and uninformed law enforcement officials. This will continue to be an important focus of EFF's work. We expect to improve our legal archiving and dissemination while continuing to provide legal information to individuals who request it, and support for attorneys who are litigating. Both the board and staff will go on writing and speaking about these

issues. Our continuing suit on behalf of Steve Jackson Games is unaffected by these changes.

RESEARCH & DEVELOPMENT.

We have started many projects over the years as their need became apparent. Going forward, EFF will allocate resources to investigating and initiating new projects. To ensure that our projects have the greatest impact and can reasonably be completed with the resources available, EFF will sharpen its selection and review process.

IN CONCLUSION...

We expect that the foregoing may not sit well with many on the Net. We may be accused of having "sold out" our bohemian birthright for a mess of Washingtonian pottage. It may be widely, and perhaps hotly, asserted that the "suits" have won and that EFF is about to become another handmaiden to the large corporate interests which support our work on telecommunications policy.

However plausible, these conclusions are wrong. We made these choices with many of the same misgivings our members will feel. We have toiled for many months to restore harmony between our two offices. But in some cases, personal animosities had grown bitter. It seems clear that much of the difficulty was structural. We believe that our decisions will go far to focus EFF's work and make it more effective. The decision to locate our one office in Washington was unavoidable; our policy work can only be done effectively there.

Given the choice to centralize in Washington, the decision to permanently appoint Jerry Berman as our Executive Director was natural. Jerry has, in a very short time, built an extremely effective team there, so our confidence in his managerial abilities is high. But we are also convinced of his commitment to and growing understanding of the EFF programs which extend beyond the policy establishment in Fortress Washington.

The Board of Directors Electronic Frontier Foundation

Mitch Kapor	mkapor@eff.org
John Perry Barlow	barlow@eff.org
John Gilmore	gnu@toad.com
Stewart Brand	sbb@well.sf.ca.us
Esther Dyson	edyson@mcimail.com
Dave Farber	farber@cis.upenn.edu
Jerry Berman	jberman@eff.org
Cliff Figallo	fig@eff.org

We recognize that inside the Beltway there lies a very powerful reality distortion field, but we have a great deal of faith in the ability of the online world to keep us honest. We know that we can't succeed in insightful policy work without a deep and current understanding of the networks as they evolve — technically, culturally, and personally.

To those who believe that we've become too corporate, we can only say that we founded EFF because we didn't feel that large, formal organizations could be trusted with the future of Cyberspace. We have no intention of becoming one ourselves.

Some will read between these lines and draw the conclusion that Mitch Kapor is withdrawing from EFF. That is absolutely not the case. Mitch remains thoroughly committed to serving EFF's agenda. We believe however, that his energies are better devoted to strategy and to developing a compelling vision of future human communications than in day to day management.

The difficult decision to reject direct chapter affiliation was based on a belief that no organization which believes so strongly in self-determination should be giving orders or taking them. Nevertheless, we are eager to see the development of many outposts on the Electronic Frontier, whether or not they

agree with us or one another on every particular. After all, EFF is about the preservation of diversity.

This has been a hard passage. We have had to fire good friends, and this is personally painful to us. We are deeply concerned that, in moving to Washington, EFF is in peril for its soul. But we are also convinced that we have made the best decisions possible under the circumstances, and that EFF will be stronger as a result. Please cut us some slack during the transition. And please tell us (either collectively at eff@eff.org or individually at the addresses below) when we aren't meeting your expectations. In detail and with examples. We don't promise to fix everything, but we are interested in listening and working on the issues that affect us all.

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COPY-IT!

At \$89.00, Copy-IT! is an option that allows CD-ROM and DISC SERVER operations on a LAN. Use Copy-It with FileMan for GIF preview and Zero Impact File Transfer. Use With TapeMan for Disc Backups without taking down the board! Copy-It can handle 65 lines with 11 concurrent tasks!

SYSMON

At \$79+.00 SYSMON is a realtime remote control system designed to look and work just like the TBBS 2.2 console. SYSMON can be configured to handle up to 65 lines including the console. SYSMON can also be used by your regular callers as a system overview and alarm watch system. Many features including complete system usage logging, TBBS application launcher and a duplicate user logging and drop. Version 4.1 now supports EGA43 line mode to display all 65 lines on screen at once.

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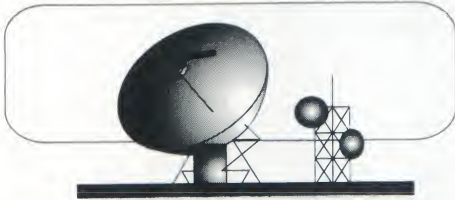
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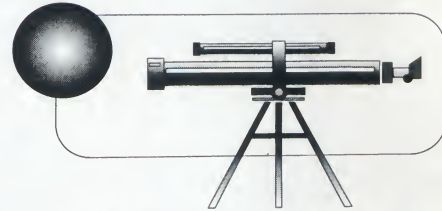
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THIS MONTH'S LIST: CHICAGO ILLINOIS

Our list this month presents some **605** BBS serving the greater Chicago Illinois Metropolitan Area. In the nation's heartland, Chicago is a good town for bulletin boards, and with good reason. It is the home of Ward Christensen's CBBS, the first bulletin board system online running on a personal computer. Started in February 1978, this first BBS is still in operation, and a **15th** birthday party is scheduled at a local pizzeria **February 16th, 1993**. Ward Christensen and Randy Seuss, founders of the original BBS, will attend.

The list keeper in Chicagoland has in the past been a young college student named Peter Anvin and the CBBSList was kept on the Colby Jordan's Stillwaters BBS. Jordan's system still runs on an 80286 with a single telephone line. But Anvin has given up the list, and Jordan wants to try other things with his BBS. Given the 150 calls daily he receives from those looking for the list, this has proven a bit difficult.

As a result of all this, several changes to the Chicago list were made in the past month or so. First, the list maintenance has fallen to a group headed by **Paul Chartraw** with research contributed by Dave Ellenwood, Max Kohn, and Andy Peterson. The "home system" of the CBBSList is now Chartraw's **Hideaway BBS 1:115/748 at (708)748-1911**. This is a two-line Searchlight BBS that also acts as a local Fidonet Echomail Hub. As a result, Chartraw has set up a network of some 15 Fidonet systems around the Chicago area where he delivers the Chicago BBS list by Fidonet mail. This helps spread the load as far as list access and the files are distributed within an hour or so of release.

Chartraw is a big fan of Searchlight BBS, citing its flexibility as one of the main reasons. He serves as Searchlight support for Indiana and Illinois and speaks highly of the software. He previously ran PCBoard, and RBBS and actually put up his first system in 1985. He works as a programmer for a local commodities firm.

One of the reasons we are running Chicago this month is that in the transition of the list, Chartraw actually verified over 600 bulletin boards to start with a good list. This is a lot of work, but at times, longstanding lists fall into general disrepair. The authors tend to count on local BBSers to bring the information to them about new systems and down boards, and if the list is well known, this works pretty well. But the best lists actually have someone dialing them, and it is unusual to get a list the size of Chicago's that is freshly verified.

The 605 bulletin boards listed do comprise one of the larger BBS metropolitan lists available. But note Chicago is the third largest metro area in the U.S. after New York and Los Angeles. And Chicago is actually not that chock full of bulletin boards. According to the U.S. Department of Commerce's State and Metropolitan Area Data Book 1991, the Chicago area sports a population of some 6,069,974 people. This works out to 10,033 people per BBS which is actually a very low density of bulletin boards compared to most cities we examine. Likewise, some 103 Fidonet systems operating in two local networks in the Chicago area comprise but 17% of all bulletin boards - an uncharacteristically low percentage of systems connected by FidoNet.

Chicago is also home to some of our favorite systems. Kevin and Kristie Behrens run a BBS as a full time occupation titled AQUILA BBS in the Chicago suburb of Aurora. Behrens runs 32 lines under PCBoard software and is currently experimenting with ISDN access - one of the few bulletin boards in the country to actually sport ISDN access lines.

George Matyasek has operated a multiline TBBS system in the area for a number of years and has done some interesting things with advertising on cable television. He also sports a special conference for ferret owners. We assume this refers to people who OWN small animals as pets. George regularly calls to request that we mention his system - Chicago Syslink. Herein do we so mention, George. Actually, George has amassed an impressive collection of

over 70 online games on his multiline Chicago Syslink system.

The "BBS title of the month" award has to go to Nun-Beaters Anonymous. We don't know. We don't want to know.

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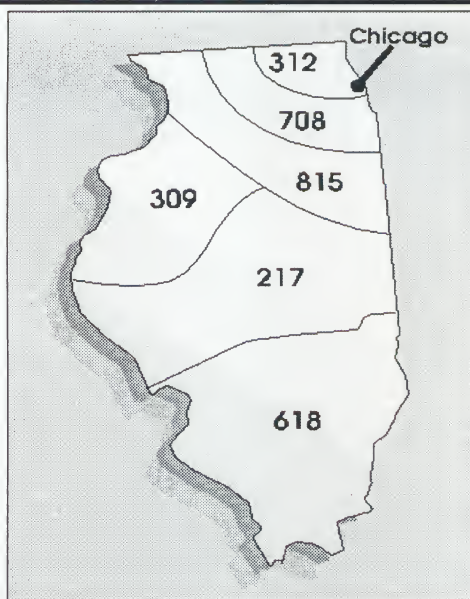
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List of 605 Electronic Bulletin Boards

Courtesy Paul Chartraw The Hideaway BBS
at 780-748-1911



BBS TITLE	PHONE	BPS	SOFTWARE
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1984	708-849-0073	2400	
1BBS	708-470-0199	14400	RBBS
20/20	312-275-1785	9600	TBBS
3KG Utica Community	815-667-5020	2400	RYBS
A Space Oddity	312-477-0716	9600	
A/V	312-906-0698	9600	WILD
ACES	219-875-3960	2400	PCBB
ADMAXX Information Systems	708-683-3540	2400	TBBS
Adline USA	708-260-8818	2400	DLXB
Adult	312-889-0089	14400	SPIT
Advocate/Nowar	312-939-4411	2400	
After Five	219-262-1370		PCBB
After The Bars	312-262-3626	2400	DLXB
Agima	815-744-5579	9600	CNET
Amalgamated	708-991-7112	14400	WILD
American Archive	312-276-3603	9600	PCBB
Amiga Doc	708-351-8815	9600	
Amiga Network	708-983-6435	14400	CNET
Antelope Freeway	708-455-0120	2400	RBBS
Apple Core	815-633-0188	2400	ANET
Apple Tree Computer Club	708-597-6942	2400	GBBS
Applied Computer Services	708-614-4914	9600	PCBB
Applied Research	708-639-8853	9600	WAFF
Aquarian	708-892-0399	2400	BBPC
Aquila	708-820-8344	14400	PCBB
Archimedes' Screw	312-761-4480	14400	SPIT
Area 88 CBIS	312-929-0422	9600	OSIR
Arena	708-367-6885	14400	PCBB
Arlington Heights Public Library	708-392-0188	1200	
Art of Luck	708-848-9298	2400	RACC
Arte' Graphics DTP	708-259-0215	2400	WILD
Assembly Not Needed	312-263-0924	14400	RBBS
Assoc. of Individual Investors	312-280-8764	2400	RBBS
B&B Electronics	815-434-2927	2400	QBBS
B.S.	708-788-8158	1200	CL64
BBS-Chicago II	312-342-0015	9600	OPUS
BYTE DEMOLINK	312-616-1071	2400	
Bad Connection	219-663-3107	9600	SLBB
Badman's	708-754-1722	2400	TRIB
Baha'i National Center	708-869-0389	2400	TBBS
Beacon	708-615-0845	2400	RBBS
Bear's Den	312-561-2382	2400	FSTP
Bear's Woods	708-854-2944	9600	PROB
BeeLine Super	219-874-2074	2400	DBBS
Beezodog's Place	708-668-8287	14400	TELF
Beginners	708-492-9932	2400	LABB
Bell Microcomputer Club	312-727-5043	9600	PCBB
Beta Connection	219-293-6465	2400	PCBB
Big Den's Pen	312-582-2458	9600	SPIT
Big Flipping Penguins	708-458-6221	2400	WILD
Bionca's Toy	708-223-5308	2400	WWIV
Bit Bucket	708-759-0569	14400	WILD
Bit Wiz	312-935-6809	14400	OPUS
Bits & Bytes	708-953-0396	2400	SPIT
Bits and Bytes	708-759-0569	9600	WILD
Black Forest	708-359-8761	9600	VBBS
Black Magic	708-481-1157	300	ONLN
Blood & Guts	708-969-9380	9600	PCBB
Blue Moon	708-457-2219	9600	
Blue Shamrock	708-771-7070	14400	SPIT
Board Room	708-916-7138	2400	WILD
Bog	312-225-9711	14400	CELE
Books & Bytes Online	708-416-9932	2400	RBBS
Bozo Board	708-948-5754	9600	
Breeze Resort	708-215-8889	2400	ORAP
Brickie's	708-858-5876	2400	PCBB
Bu\$ine\$\$man's \$pecial	312-736-5415	9600	WILD
Bubblehead	708-688-0649	14400	WILD
Bulletproof	708-894-1126	14400	RACC
Byrd's Nest	815-477-9338	14400	SPIT

BBS TITLE	PHONE	BPS	SOFTWARE
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C.C.B.S.	708-674-6502	2400	
CAEUG	708-530-0194	2400	RBBS
CAPPS Remote	708-672-7611	2400	RBBS
CHART-Board, First	815-337-0279	9600	TBBS
COM*ONE	708-717-9370	9600	FALK
COPH	312-436-0559	2400	
CPSnet	312-535-8512	2400	MGPE
Cactus Ranch	708-234-8169	9600	SPIT
Camac Online	815-838-8734	2400	WILD
Captain Video	708-272-0943	1200	
Carnal Knowledge	708-818-9569	2400	WILD
Castle Anthrax	815-748-2539	9600	
Cellblock	708-455-9488	14400	WILD
Cess Pool	708-352-9231	9600	SPIT
Chemical Warfare	312-725-2758	2400	TLGD
Chess Board	312-784-3019	9600	SPIT
Chicago	708-297-1591	9600	RACC
Chicago Board of Trade	312-239-1889	14400	PCBB
Chicago Byte House	312-889-6813	9600	SPIT
Chicago Computer Society	312-879-9021	14400	RBBS
Chicago Machine	312-233-9607	14400	FRST
Chicago Matchmaker	708-388-3630	2400	MEPS
Chicago Megaphile	312-283-4035	14400	SPIT
Chicago Online!!	708-895-4042	9600	WILD
Chicago PC Jr User Group	708-894-9989	2400	OPUS
Chicago Programming Society	312-794-9075	9600	TLGD
Chicago Syslink	708-795-4442	9600	TBBS
Chicago TI-99/4a User Group	708-862-0182	2400	
Chicago Transfer Authority	708-447-3857	9600	NVLP
Chicken Coop	708-658-1545	14400	SPIT
Chinet	312-283-0559	2400	
Christian Connection	219-464-9164	9600	PCBB
City	708-299-3310	2400	DBBS
City Limits	708-966-2342	9600	SPIT
Clip Heaven II	708-453-5589	14400	PCBB
Club	708-671-9665	2400	DLXB
Club Sierra	708-816-3231	14400	SPIT
Coal Valley PCUG	815-634-2791	9600	VBBS
Coconut Club III	312-281-6887	2400	TAGG
Code One	708-789-3610	2400	PROB
College Town	815-899-4702	9600	PCBB
Comic Scene	815-434-3742	1200	RYBS
CommLink	219-662-0986	2400	SLBB
Compact Disc Connection	312-751-2447	9600	
Compu-Graphics	708-933-0456	2400	TLGD
CompuErotica	312-902-3599	2400	NITE
Computer Connection	708-388-1723	9600	VBBS
Computer Direct	708-382-3270	2400	TBBS
Computer's Plus More	708-882-5903	9600	WILD
Computers for Christ #11	708-362-7875	9600	TBBS
Continuum	708-395-6749	9600	RNGD
Continuum Foundation	312-248-0234	9600	TLGD
Coordinate Axis	708-968-0149	9600	GTBB
Cooter's Garage	312-271-7348	2400	SLBB

TOP SOFTWARE TITLES

BBS: 605
POPULATION: 6,069,974
AREA: 1884 sq miles
POPULATION Per BBS: 1 : 10,033
BBS Per AREA: 1 : 3.114 sq miles

PC Board 81 13.4%
Telegard 62 10.2%
Wildcats 57 9.4%
Spitfire 37 6.1%
RBBS 36 5.9%
TBBS 24 3.9%
Searchlight 19 3.1%
RA 17 2.8%
C-Net 12 1.9%
Hermes 10 1.6%

14400 bps 127 20.9%
9600 bps 194 32.1%
2400 bps 253 41.8%
1200 bps 20 3.3%

BBS TITLE	PHONE	BPS	SOFTWARE	BBS TITLE	PHONE	BPS	SOFTWARE
Corporate Desktop Publishing	708-858-4469	14400	WILD	Feminist	312-624-8771	1200	GBBS
Corporate Headquarters	815-886-3233	14400	PCBB	File Depot	815-455-7279	9600	WILD
Cosmic's Universe	312-583-0053	2400	SLBB	Final Frontier	312-334-8638	2400	ORAP
Crossroads (A)	815-933-5390	2400	WILD	Financial	708-931-7478	2400	RBBS
Crossroads (B)	312-587-8756	14400	TLGD	Fire Department	219-447-3011	2400	WILD
Crown Point	219-663-9177	2400	CNET	Firm Foundation	708-485-3928	2400	TBBS
Crystal Palace	219-929-4254	9600	PCBB	Flat Cat Alley	708-746-0548	14400	OPUS
Custer's Last Stand	708-810-9860	2400	CL64	Forbidden Realms	312-774-1447	2400	VBLS
Cyber Quest	708-548-1052	2400	TLGD	Fourth Dimension	312-284-7133	14400	PCBB
Cyclops	708-839-5002	2400	TBBS	Fox Valley	708-377-5988	9600	PCBB
Dark Castle	815-729-0188	2400		Fox Valley CS	708-888-1112	2400	QBBS
Dark Image	708-355-5412	2400		Fox Valley CBM UG	708-851-4252	2400	PCBB
Data Storm	708-724-6641	9600	SPIT	Frankenstein's Lab	312-631-1233	2400	
Database II	708-439-4708	2400	COLI	Free Board	312-275-0848	14400	RBBS
Datacom of Highland	219-923-2377	14400	PCBB	Fremen Mountain	312-764-0719	2400	FRMN
Dave's Hideout	708-705-5049	1200	RBBS	French Connection	708-755-0087	1200	
Daze Inn	708-437-8387	14400	RACC	Funeral Home	815-723-2522	2400	
Ddsw1	312-248-0900	14400	AKCS	G & B Adult System	815-465-2292	2400	SPIT
Dead Zone	708-223-6408	9600	TAGG	GCG Programming	708-689-4793	2400	WILD
Deep Space Nine	708-752-1783	2400	TLGD	GIF(t) Exchange	708-780-9287	2400	PCBB
Defcon One	708-249-2183	2400	RBBS	GREGdoor	708-904-2149	9600	XZOT
Depot	815-834-0460	9600	TLGD	Gagme	312-282-8606	2400	UNIX
Destruction's Realm	708-474-4280	9600	SLBB	Galactica	708-739-3022	9600	VBBS
Dial-Your-Match 102	708-799-7756	2400		Galaxy	708-690-4958	2400	TLGD
Dial-Your-Match 206	312-764-1699	300		Game Dungeon	708-215-1543	9600	WILD
Dickie's Place	312-252-0642	9600	XZOT	Gamer's Guild	708-799-9569	9600	RNGD
Digital Contraband	815-942-8573	14400	VBBS	Gatez of Paradise	312-764-6772	14400	TLGD
Digital Dynamics Online	708-991-3830	14400	AUNT	General's Army	708-668-1009	2400	TLGD
Digital Systems	708-307-9097	9600	WILD	Glenside	708-587-9837	2400	
Distant Fingers	312-777-0240	14400	TLGD	Glenside's Cup of Coco	708-428-0436	2400	COCO
Distortions	708-823-0628	9600	TLGD	God's Country	708-964-5281	300	DIAL
Dog House	708-830-8805	9600	CNET	Gospel Outreach Download Sys	708-934-1649	2400	PCBB
Dolph's World	708-759-7039	2400	TLGD	Gothic Folly	312-528-4724	2400	SLBB
Dragstrip	708-489-0031	9600	PCBB	Graphicon	708-634-2828	2400	MTRO
DuPage Library System	708-232-7577	1200		Great Cavern	708-683-3666	14400	PCBB
DuPage Project Associates	708-964-0526	9600	PCBB	Great Lakes Region CAP	708-532-8209	2400	RBBS
Dudes Home	708-257-3399	9600	TLGD	Great Northern	708-632-0884	14400	WILD
DynaMIKE	708-520-2659	9600	SPIT	Greater Chicago AutoCAD U.G.	708-587-5389	14400	RBBS
E.T.'s	219-674-6243	2400	QBBS	Greater Chicago Diving Board	708-259-1146	2400	RYEB
EMPIre	708-473-2364	9600	PCBB	Grey Matter	708-208-0662	14400	WILD
EMTech Systems'	708-705-7094	2400	GAPP	Ground-ZERO	708-690-1781	9600	TLGD
Eagle's Nest	815-282-9248	9600	OPUS	Grundy-Files	708-801-6645	2400	TLGD
East Village	312-777-2574	2400	TRIT	H.U.R.K.	708-801-0823	14400	SPIT
Electric Estates	708-424-6136	9600	RBBS	Halls of the Video Warrior	708-742-9206	2400	RNGD
Electropolis	708-213-1666	1200	MAJR	Hard Drive USA II	708-755-0192	2400	SPIT
Elgin Area Professional PC UG	708-888-7381	9600	PCBB	Hardware Shoppe	708-653-0958	2400	TLGD
Elk Grove Repeater	708-529-1586	9600	EZCM	Harvester Network	708-887-7685	14400	TBBS
Emergency	312-631-3467	2400	MAJR	Hat Trick	708-717-9726	14400	
Emergency Nurses Association	312-649-0490	2400	TBBS	Hazardous Materials Info Exch	708-972-3275	14400	PCBB
Emporium	708-551-9275	9600	RACC	Heaven - A Gamer's Paradise	708-844-1177	2400	TLGD
Enchantica	708-747-6311	1200		Hell Pit	708-459-7267	9600	TLGD
Equinox	312-631-2172	14400	PCBB	Hemisphere	708-255-0002	9600	GBBS
Erotica	708-208-5958	9600	WILD	Hidden Treasures	708-599-1063	2400	TBBS
Errogenous Zone	708-535-1040	9600	MAJR	Hideaway	708-748-2095	14400	SLBB
Evanston Public Library	708-864-6720	9600		Hispanic Bell Mgmt Association	312-727-4868	2400	WILD
ExIS Inc. DataEase Support	312-380-7603	9600	SPIT	Holy Grail	708-222-1540	2400	RBBS
Excaliber	219-923-7611	2400	PCBB	Hook, Line, and Sinker	815-723-2801	2400	TLGD
Excalibur	708-957-0313	1200	XLNK	Hopefully Heaven	312-523-6351	1200	CNET
Executive Region	312-267-4749	14400	PCBB	Hot Mix	708-516-8679	9600	WILD
Extraneous Redundancies	312-808-9576	14400	SLBB	Hotel Amiga	708-653-6089	9600	CNET
Eye Resources Network	708-299-1296	14400	RACC	House of Kinks	708-289-0034	2400	DLXB
F.U.B.A.R.	708-513-0138	9600	WILD	I Can!	312-736-7388	2400	SLBB
Fantasy Island (A)	219-696-6904	2400	TLGD	I.C.I.X.	815-459-0825	14400	SPIT
Fantasy Island (B)	815-727-1559	14400	TLGD	IBEW Local 1220	708-292-1223	2400	WILD
Fantasy Island (C)	708-916-1286	9600	GAPC	IBM Christian Connection	708-540-9383	9600	SPIT
Faster Disco	708-232-8140	9600	VBLS	Illinet Online/Carl Uncover	708-295-0077	2400	

BBS TITLE	PHONE	BPS	SOFTWARE	BBS TITLE	PHONE	BPS	SOFTWARE
Illinet Online/Carl Uncover	312-362-5368	2400	.....	Mod City	708-464-0120	2400	..... TLGD
Illinois Byte Exchange	708-228-9427	9600	..... SPIT	Monsoon Hotel	312-927-9534	14400	..... PCBB
Illinois CPA Society	312-993-3475	2400	..... PCBB	Moon Light	708-328-6852	2400	..... SLBB
Impact V: The Immortal Realms	312-784-1752	2400	..... TLGD	Mortgage Market	708-834-1450	9600	.....
Indiana Online	219-762-3775	2400	..... VBBS	Mount Prospect Library (A)	708-253-0566	2400	.....
Info=Power	219-762-2141	2400	..... SLBB	Mount Prospect Library (B)	708-253-6224	9600	..... WILD
InfoComm Co	312-751-1503	2400	..... RRDH	Mouse	219-674-9288	2400	..... BBSE
Infoplus	708-537-0247	14400	..... WAFF	Mulligan's Place	708-566-6183	2400	..... MAJR
Information Exchange	708-885-2151	14400	..... IBBS	Multi-Level Mania Info Svc.	708-658-9321	2400	..... QBBS
Innovators	708-918-1231	14400	..... FRST	Multi-Link	815-963-9717	2400	..... FALK
Insane Domain	312-274-9515	9600	..... FRST	Murphy's Place	708-428-6125	2400	..... SPIT
Integrated System Solutions	708-481-4177	9600	..... WILD	Music Emporium	708-960-9703	2400	..... CL64
Intercept	708-345-7202	9600	..... GTBB	My House	708-739-9355	9600	..... TRIT
Interstellar Overdrive	708-991-4879	14400	..... TLGD	N9CSA N.A.B.S.A.	312-776-5561	14400	..... WILD
Intimate Mansion	708-934-3045	2400	..... DLXB	NABET International	312-427-5454	9600	..... PCBB
It's a Free Country	708-752-0174	14400	..... WILD	NEWTON	708-252-8241	14400	.....
JBS-BBS	312-583-1674	14400	..... SPIT	NIU CEET	815-753-2308	2400	..... WILD
Jail House	708-596-7556	14400	..... WILD	NIU Connection	815-753-1800	2400	.....
Jay's Place	708-759-7302	2400	..... TLGD	NW9J	708-825-7106	2400	..... RYBS
Jesus People USA - CFC #43	312-878-6030	2400	..... TBBS	National PC and MIDI Data Bank	708-593-8703	2400	..... SPIT
Jim's FlyInn	312-881-1142	9600	..... MAXI	NeWare	708-665-9876	9600	..... PCBB
Jokertown	312-907-0047	300	..... DIAL	Nessy Games System	708-356-6897	2400	..... CUST
Junk Shop	708-934-0252	2400	..... TLGD	Network 21	312-784-2852	2400	..... RACC
Kaos	708-263-9561	14400	..... HRMS	New Dawn	708-459-8498	9600	..... PHOE
King's Court	708-860-2496	9600	..... SLBB	New Universe	708-629-3051	14400	..... UBBS
Knight's Quest	312-271-4733	2400	..... VBBS	New World	708-510-1071	2400	..... PCBB
LOOP Premium Graphics	708-675-5667	14400	..... PCBB	Nezuld's Domain	708-559-0513	9600	..... PCBB
LUG	219-269-9459	2400	..... PCBB	Night Link Chicago	312-873-6752	14400	..... TRIT
Lake Effect	219-929-5574	2400	..... SLBB	Night Owl	708-426-9738	2400	..... IMAG
Lake Zurich Wildcat	708-438-5351	14400	..... WILD	Night Train	708-395-0991	2400	..... MAXI
Lakes Region	708-872-8086	9600	..... PCBB	Nightline	708-854-9492	2400	..... SPIT
Lambda Zone	708-827-3619	9600	..... TBBS	Nightmare Cafe	708-677-1221	9600	..... TLGD
Lambda Zone	312-693-7871	9600	..... TBBS	Nix Pix Windy City	708-564-1069	2400	..... WILD
Laran Communications	708-690-9860	9600	..... WILD	NixPix Person-To-Person	708-223-4802	2400	..... ORAP
Laser Stuff	708-469-4850	9600	..... PCBB	Nocturnal	708-513-6358	2400	..... TLGD
Last Chance	708-362-1088	2400	.....	North Lake NixNet	219-659-7205	9600	..... WILD
Last House on the Left	708-428-0519	2400	.....	North Pole	312-436-2261	2400	.....
Late Night	708-595-4132	14400	..... PCBB	North Suburban Library System	708-459-4878	1200	.....
Lattice	708-769-4084	9600	..... DBBS	Northern Star	219-289-0282	2400	.....
Law MUG	312-661-1740	9600	..... RBBS	Northwestern University Library	708-491-3070	9600	..... LUIS
Law View	312-427-6291	2400	..... RBBS	Not So Perfect	312-237-8365	14400	..... PCBB
Learning Resources Ctr of CoD	708-790-2332	1200	.....	Nuclear Greenhouse	708-998-0008	2400	.....
Library	708-564-1339	2400	.....	Nun-Beaters Anonymous	708-251-5094	2400	..... TLGD
Life After Death	708-824-7620	2400	..... TLGD	O'Hare Oasis	708-298-4121	9600	..... TAGG
Lighthouse	219-464-0411	9600	..... TLGD	OPOWD Crowd	708-885-8865	9600	..... WILD
Line Noise	708-520-0095	9600	..... SPIT	Oak Lawn	708-964-2710	9600	..... PCBB
London Underground	708-680-9420	14400	..... TLGD	Oak Lawn Sound Machine	708-425-6665	14400	..... RNGD
Lone Star	708-223-6990	9600	..... TAGG	Oaknet	708-425-8739	2400	..... UNIX
Looney Bin	815-942-5015	14400	..... TLGD	Obloid Sphere	708-965-3098	2400	..... TLGD
Lost	312-474-0410	14400	..... XZOT	Off the Wall	708-372-0094	9600	..... GTBB
Lug Nutz	219-845-5673	2400	.....	Olivet!	815-939-5187	2400	..... WILD
MACropoedia	708-295-6926	14400	..... SSIT	Omega	312-573-1657	14400	..... CNET
MOM	219-277-5565	1200	..... TBBS	Oracle	815-744-7363	14400	..... CNET
Mac'Effects	708-360-1981	14400	..... HRMS	Oracomm #103	312-523-4904	2400	..... ORAP
MacCentre	708-831-1142	9600	..... NVLP	Orgasm!	312-772-2452	2400	.....
Macinations	708-352-9282	9600	.....	OutHouse	708-672-3668	2400	..... TLGD
Magic Gateway	815-398-4678	2400	.....	Overback	708-366-0882	2400	.....
Magic Lantern	219-659-2711	2400	..... RACC	Overdrive	312-761-0274	9600	..... TRIT
Magrathea	708-759-7908	14400	..... RACC	Oz	219-853-9710	2400	.....
Main Street	815-478-5026	9600	..... SPIT	P.S. Meeting Room	708-232-6339	14400	..... WILD
Mainframe	708-223-2344	14400	..... SPIT	PC Gremlins	708-532-5877	9600	..... RBBS
Majestik Moose	708-843-2871	14400	..... PCBB	PC-Link	708-755-7126	9600	..... PCBB
Malachi Brothers	312-283-8564	14400	..... RNGD	PCPS Support	708-307-8596	14400	..... PCBB
Marantha	708-628-0330	9600	.....	PUB Desktop Publishing	312-376-9872	9600	..... PCBB
Marist BBS	312-881-5355	2400	..... RNGD	PYROtechnics	708-991-9403	9600	..... TLGD
Masquerade	708-963-4551	9600	..... QBBS	PalNet	708-359-8080	2400	.....
McHenry	815-385-5031	14400	..... PCBB	Panoptic Net	219-674-5292	2400	..... CNET
McHenry Wildcat	708-497-4956	2400	..... WILD	Panther Post	708-397-9243	2400	..... SPIT
Medfirst	708-429-9160	9600	..... PCBB	Paradise Towers	312-583-8481	14400	..... PCBB
Melting Point	708-698-1774	2400	..... MAJR	Park Place	708-892-3449	9600	..... RACC
Mermaids Cove	708-424-6065	2400	.....	Parrothead Supplies	708-887-0449	2400	..... PSEA
Metro	708-742-2798	14400	..... TLGD	Patrick's Compatibles	708-587-3358	9600	..... TAGG
Micro Overflow	708-355-6942	2400	..... PCBB	Pegasus (A)	708-623-9570	2400	.....
Micro Systems	708-695-1251	9600	..... WILD	Pegasus (B)	815-433-0787	2400	..... MAJR
MicroLink	312-631-7191	2400	..... MAJR	PepperGrass Express	219-288-8586	9600	..... TBBS
MicroTech Amiga	708-851-3929	14400	..... CNET	Phantom Express	815-877-0414	2400	..... RBBS
Micrographics	312-648-1981	2400	..... RACC	Phoenix Fantasy Hide-Away	708-526-4161	9600	..... WILD
Microsource	708-350-7863	2400	..... PCBB	Photo Exchange	708-331-4494	2400	..... SUPR
MidWest	708-513-1034	9600	..... PCBB	Picture Perfect	219-942-8204	9600	..... PCBB
Midas Touch	312-764-0591	14400	..... PCBB	Pirates Cove	708-830-2597	2400	..... TLGD
Midnight Connection	312-594-0813	9600	..... PCBB	Pisces Financial	312-281-6046	14400	..... TBBS
Midrange System	708-776-1062	14400	..... RACC	PitStar	708-687-4413	14400	..... PCBB
Midwest Biomedical Society	312-227-7455	2400	..... RBBS	Planar Board	219-325-0033	2400	..... PCBB
Mike's Mess	815-634-2186	9600	.....	Pleaser's Playground	708-795-1270	9600	..... RACC
Mills Brothers	708-690-3808	9600	..... PCBB	Point	312-338-0632	9600	.....
Missile Silo	708-581-1735	2400	..... TLGD	Point After	708-432-3267	2400	..... VBBS
Missing Link	312-221-2879	14400	..... PCBB	Point Zero	708-432-9028	300	..... DIAL

BBS TITLE	PHONE	BPS	SOFTWARE	BBS TITLE	PHONE	BPS	SOFTWARE
Precision Board	708-391-8773	14400	WILD	StarFleet Mainframe	708-757-7528	2400	TLGD
Prime Time	708-741-1995	14400	HRMS	Starship	815-838-2821	2400	
Prince Charles Message Svc	708-462-7560	1200		Starz	312-348-3508	2400	
Pro-Ren	815-728-0455	9600	PLIN	Stillwaters	708-403-2826	9600	RBBS
Profit Margin	708-356-7895	9600	RBBS	Straight Board	708-689-1980	14400	GTBB
Psycho Ward	708-279-8547	300	DIAL	Straight Board II	708-689-0119	2400	PCBB
Purple Dungeon	815-722-3531	2400	XZOT	Stuff!	815-663-1653	2400	
Python	708-680-5105	9600	BPRO	Suburban	708-681-4690	14400	PCBB
QX-Link Chicago	708-455-9193	2400		Suburban Chicago Atarians	708-231-7227	2400	MICH
R.C.S. Multi-Node	708-390-6594	2400	PCBB	Suburban Library Dial Access	708-459-8375	300	
RBBS of Chicago	708-352-1035	9600	RBBS	Suburban Software	708-636-6694	14400	PCBB
Racer's Edge	708-653-9076	14400	WILD	Sun, Surf & Serenity	708-453-6630	9600	WILD
Radio Daze	219-256-2255	2400	GAPC	SunValley Amateur Radio	708-838-8929	9600	
Radio Free Illinois	815-729-9793	2400	RBBS	Suzie's Place	708-759-7953	2400	XZOT
Radio Hill	708-537-4663	2400	IMAG	Swan System	708-325-9272	1200	
Raganrok	312-622-3313	9600	TLGD	TECH - Tech. Advantage	312-784-1752	2400	TLGD
Random Access	708-489-1542	9600	VBLS	TIP Express	219-453-4046	2400	
Rational Tech Info Center	708-378-0045	14400		Talkback!	708-640-6759	14400	TLGD
Razor's Edge	312-202-8066	14400	TLGD	Tashbaan	708-749-1103	2400	PYRO
Real Estate Forum	312-743-1769	2400	RBBS	Tears of Isis	708-888-3936	14400	HRMS
Recovery Room	708-963-5496	14400	PCBB	TechLine	708-674-1989	9600	RBBS
Reflections	815-477-2888	2400		Techno Head	708-843-2868	2400	TLGD
Remote Control	708-223-8384	9600	XZOT	Tele-Rag	815-935-5020	2400	
Renegade	708-629-9293	9600	RNGD	Telstar	219-845-3886	9600	PUNT
Resource	708-895-8140	2400	XZOT	Temple of Pong	708-268-1591	9600	
Resputed	708-295-9133	9600	SPIT	Terrapin Station	708-657-9543	9600	TBBS
Rest of Us MUG	708-291-6660	14400	OPUS	Thunderbolt (B)	708-653-4163	2400	SPIT
Restaurant at the End of Univ	815-455-9783	9600	TLGD	Thunderbolt (C)	708-689-4763	9600	GTBB
Resting Place	815-786-6240	9600		Thunderbolt, Inc.	312-248-0109	2400	MAJR
Restoration Rock	219-926-2060	2400	PCBB	Tiger Claw	708-223-2886	2400	SLBB
Revelations	815-727-3398	2400	GENE	Tiger's Den IV	708-730-0840	9600	TLGD
Revenge	708-869-2136	14400	HRMS	Timber Lake	708-487-1093	9600	WILD
RichWare Shareware	708-395-1253	14400	PCBB	Time Vortex	815-741-3544	14400	
Rick's Cafe	815-834-1914	2400	FREM	Toolkit	219-696-3415	9600	PCBB
Riff Raff	815-937-5217	2400	WILD	Top Gun	312-768-5853	9600	RBBS
Ripco II	312-528-5020	9600	SLBB	Trading Post	708-941-7095	2400	RBBS
River City	815-434-4430	14400	RACC	Treasure Chest	219-287-4326	2400	TBBS
River Styx II	708-432-2659	9600	BPRO	TrendTec	708-759-9214	9600	HRMS
Robbie's Retreat	708-526-8545	9600	PCBB	TurboSof	708-778-8620	9600	SPIT
Rock-N-Roll Hangout	219-942-6746	2400	CNET	Twilight Zone	219-374-8856	2400	SLBB
Rockin K's Software Studio	708-679-6338	2400	TLGD	Twister	708-849-3343	9600	WILD
Round Table	312-777-9480	2400	SLBB	U.S. Robotics Tech Support	708-982-5092	14400	TBBS
RuneQuest	312-728-7784	14400	BPRO	UBU-Midwest	708-766-1089	2400	RBBS
S.C.U.G.	708-852-1292	2400		US BBS	219-262-0910	9600	
SGS-Thomson Apps Lab	708-517-1898	300	RACC	Uncle Bob's	708-265-0698	14400	SPIT
SQLBBS	312-589-0508	9600	RBBS	Under The Influence	815-942-2930	14400	DIGI
ST Center	708-456-6875	9600	FREM	Underground	708-835-0316	2400	XZOT
ST Outpost	219-289-9123	9600	FREM	Underground Conspiracy	708-991-3488	2400	HRMS
Sahakian's Business Info	708-982-0005	2400	TBBS	United	708-473-5334	2400	RACC
Salem's Lot	708-439-4811	9600	TLGD	Up All Night	312-646-6615	14400	PCBB
Samson	708-394-0071	9600	FIDO	Used Books	708-957-3546	1200	RBBS
Sandwich C.U.G.	815-785-2699	1200	CL64	Uumeme	708-893-9428	2400	UNIX
Satalite	708-636-8259	14400	PCBB	VARO Chicago Property Mgtt	312-353-2382	2400	PCBB
SaveWare	708-724-2449	2400	TLGD	Vertigo File	815-224-3604	9600	CELE
SaveWare Computer Shopping	708-724-2427	14400	RNGD	Video Tron	708-458-3188	2400	
Scan-A-Mania	708-831-0456	2400	SBBS	Villa Straylight	708-359-2088	9600	TLGD
Schaumburg Township Library	708-885-9983	1200		Village (A)	312-581-1111	14400	PCBB
School Board [Teachers only]	312-604-8715	2400		Village (B)	219-980-4619	2400	EXPR
Scintillation	708-953-4922	9600	PCBB	Vineland	708-931-4505	2400	RNGD
Scruncher	708-830-6387	14400		Virtual FX	708-653-7092	14400	VBBS
Security	708-587-2398	2400	RBBS	Vpnet	708-833-8126	9600	AKCS
Sex Asylum	708-635-5620	2400	PCBB	Ward Board	708-849-1132	2400	
Shadow	708-513-5932	9600	HRMS	Ward and Randy's	312-545-8086	9600	
Shangri-La	708-596-3648	9600	HRMS	Warp Speed	708-965-4662	9600	SLBB
Shareware Library	815-727-6072	9600	TLGD	Washington Towne Crier	708-548-2481	9600	MAJR
Ship to Shore	708-670-7940	9600	WILD	Watch City	708-931-7966	2400	EXPR
Shop	708-426-8228	9600	PCBB	Water Tower	708-597-2684	9600	RBBS
Shoppe	708-888-0078	14400	PCBB	Waukegan Public Library	708-623-1125	14400	TBBS
Silence of the Sysops	815-795-2075	2400	WILD	Well of Souls	708-960-3141	9600	
Silent Society	708-365-2155	14400	TLGD	Wheaton File Exchange	708-462-1509	14400	WILD
Silky's Chambers	708-403-4090			Wild Side	312-777-4184	9600	CNET
Silver Tongue	708-759-1916	2400	GBBS	Wild West	708-879-8703	2400	TLGD
Simple	708-724-2600	9600	RRDH	Windmill	708-232-1015	9600	PCBB
Singularity Station	708-356-7107	14400	RACC	Windy City	312-275-7492	9600	TRIB
Skyway	312-871-9942	2400	SPIT	Windy City GIF Cache	312-929-0824	9600	IBBS
Snarf's Music Studio	708-290-9993	9600	TLGD	Wolf's Warehouse	219-256-1357	2400	GAPC
Snow's Dorm	708-566-4083	9600	WILD	Wooge City	312-262-7125	2400	HRMS
Software Express	708-749-2162	2400	SPIT	Working with Works	708-260-9660	2400	RRDH
Sometimes	219-763-2031	2400	TLGD	Workstations Unlimited	312-404-0549	2400	SLBB
Sound Management	708-949-5397	14400	PCBB	WorldBridge	815-725-8742	9600	XCHG
Source	219-836-9665	9600	TLGD	WorldBridge	815-725-8727	14400	XCHG
SouthDog	708-323-4711	2400		Writer's Block	219-287-5020	2400	WILD
Space City	708-748-4025	9600	PCBB	You Can Call Me Ray	708-358-5611	9600	RBBS
Special Needs	219-659-0112	2400	WILD	Zarethian Empire	708-473-1006	2400	
Spectrum MACinfo	708-657-1113	14400	OPUS	Zen Arcade	708-934-6224	2400	TLGD
Squirrel's Next	708-433-7509	2400	TLGD	Zlink-Com1	708-808-2264	2400	TBBS
St.Charles Graphics Xchange	708-513-8945	14400	WILD	Zoo	312-907-1831	2400	DLXB
Star Base 428	708-442-8020	2400	TLGD				

BOARDWATCH

LIST OF BBS LIST KEEPERS

This listing comprises a list of those who compile and maintain lists of bulletin boards, either by topical category, or by some geographic area or definition - often by area code. The primary bulletin board system where the list can be downloaded electronically is also included.

BBS LIST TOPIC	LIST AUTHOR/EDITOR	CONTACT BBS	TELEPHONE
96 List - 9600+bps BBS	Ken Sukimoto	Downtown BBS	(213)484-0260
AC 516 Free Shareware BBS	Harold Stein	Long Island Exchange	(516)385-7882
Airline Pilot/JUMPSEAT BBSs	Rex Chadwell	ChicAAgo Hangar	(708)980-1613
Alaska AC 907	Patti Johnson	Alaska Pirate Soc.	(907)562-1854
Apple II BBS with Internet con	Morgan Davis	pro-sol	(619)670-5379
Area Code 517 - Mid-Michigan	Rick Rosinski/SAMM	Wolverine BBS	(517)695-9952
Arkansas Area 501	Bob Underdown	The Gaslight BBS	(501)444-8420
ASP BBS Member List	Bob Ostrander	PBS-BBS	(317)856-2087
Astronomy/Space BBS	John Pickens	Starbase III BBS	(209)432-2487
Atlanta Area 404	Online Atlanta Society	OASIS	(404)627-2662
Atlanta Area 404	Rodney Aloia	INDEX System	(404)924-8472
Austin Area BBS List AC 512	Gordon L. Harlan	--ACE*BBS--	(512)258-9553
Autocad Related BBS	Jason Osgood	Alacrity BBS	(206)643-5477
Baltimore Area 410	Brad Blase	Network BBS	(410)247-3797
BBS With Handicapped Focus	Bill McGarry	Handicap News BBS	(203)337-1607
Black Run/Oriented BBS	Arthur "Rambo" McGee	BDPA BAC BBS	(707)552-3314
Business/Professional BBS	Dennis Hauser	Delight The Customer	(517)797-3740
California AC 310	Jim Walton	Illusions BBS	(310)804-3324
Central California AC 209	Jack Porter/Madera UG	Zen Den Systems	(209)675-8436
Central California Area 805	Larry Honore	His Board	(805)652-1478
Chicago	David Nathan	HURK BBS	(708)801-0823
Chicago	Paul Chartraw	Stillwaters	(708)403-2826
Cleveland Area 216	Eric Rickin	Wine Cellar	(216)382-2558
Commodore 64/128/Amiga BBS	John Rigali	Scream BBS	(818)287-4570
CompuCom Modem BBS List	Thomas Weathers	Referral Market BBS	(803)297-4395
Connecticut AC 203	Kevin Brook	Creative Edge BBS	(203)743-4044
Conservation/Nature BBS List	D.Wendling/JS Christianso	Coin of the Realm	(301)585-66
Dallas/Ft Worth Area 214/817	Mark Robbins	Second Sanctum	(817)784-1178
Darwin National USBBS List	Bob Breedlove	Bob's BBS	(916)929-7511
Desktop Publishing BBS	Frank Atlee	Infinite Perspective	(301)924-0398
Detroit Area 313	Horst Mann	Tony's Corner	(313)754-1131
Ecology/Conservation BBS	Bob Chapman	EarthArt BBS	(803)552-4389
Engineering Related BBS	Arthur Petrzelka	Computer Plumber	(319)337-6723
Geneology Related BBS	Richard A. Pence	NGS-CIG	(703)528-2612
Graphical User Interface BBS	David Shapiro	The Goopy (GUI) BBS	(212)876-5885
Ham/Amateur Radio BBS	Stan Staten	3WINKs BBS	(301)590-9629

BBS LIST TOPIC	LIST AUTHOR/EDITOR	CONTACT BBS	TELEPHONE
Handicapped Issues BBS	Richard Barth	HEX BBS	(301)593-7357
Houston Area 713	David E. Wachenschwanz	Atomic Cafe BBS	(713)530-8875
Kansas City Area 816/913	Roy Timberman	Sound Advice	(816)436-4516
Kitsap County Washington	Michael Schuyler	Quicksilver BBS	(206)780-2011
List of Gay/Lesbian BBS	Eric Blair	S-TEK BBS	(514)597-2409
Macintosh BBS	Bill Taylor	Fort Mill Tabby	(803)548-0900
Medical Issues BBS	Edward Del Grosso	Black Bag	(302)731-1998
Milwaukee Area 414	Jay Jadofsky	Priplanus	(414)442-0170
Minnesota Twin Cities AC 612	Barry Watson	Abiogenetic BBS	(612)489-7983
National 800 Number BBS List	Michael Long	Hayes Online	(800)874-2937
National Adult BBS List	Clayton Manson	Titan BBS 1:3612/140	(904)476-1270
National BBS List	DP McIntire/Beth Spotts	Ameriboard	(412)349-6862
New Jersey AC 609	Dave Schubert	The Casino PCBoard	(609)561-3377
New Jersey Area 201/609/908	Wayne R. Morton	Praedo BBS	(609)953-0769
New Orleans BBS List	Jeff Jones	Southern Star BBS	(504)885-5928
Ontario Area 705	Alex Draper	Cottage Country BBS	(705)835-6192
Open Access UNIX Site List	Phil Eschallier	LGNP1 (login:BBS)	(215)348-9727
Orlando Florida AC 407	Matt Drury	London BBS	(407)895-1335
OS/2 BBS Systems	Pete Norloff	OS2/Shareware BBS	(703)385-4325
OS/2 Related BBS	Dave Fisher	LiveNet 1:170/110	(918)481-5715
Pennsylvania AC 215/609/302	Ron Brandt	DSC/VOICENET	(215)443-9434
Pittsburgh AC 412	Chas Stokes	Quad-Tech Systems	(412)262-4794
Portland Oregon BBS	Lisa Gronke	DawGone Disgusted	(503)297-9145
Raleigh NC Area Code 919	Mike Stroud	Micro Message Svc.	(919)779-6674
Republic of South Africa	Henk Wolsink	Catalyst BBS	(041)34-1122
Rhode Island Area 401	Mike Labbe	Eagle's Nest	(401)732-5292
Rochester NY AC 716	Tracy Logan	Logan's Run	(716)256-2659
San Diego AC 619	Joe Nicholson	General Alarm	(619)669-0385
San Diego, CA AC 619	Ron Dipold	ComputerEdge	(619)573-1675
San Francisco Area 408/415/510	Julie McGrew	Bay List BBS	(510)339-1045
Seattle AC 206/West Washington	Bob Dinse/Nanook	Eskimo North	(206)367-3837
Selected BBS	Joseph Caplinger & Son	J&J's BBS	(513)236-1229
South Florida Area 305/407	Eric Thav	Silicon Beach BBS	(305)474-6512
Southern California	Mike Hefferman	SOCAL Corner	(213)422-7942
St. Louis AC 314	Beth Brooks/Phydeaux Soft	Offworld BBS	(314)579-0700
Tacoma Washington AC 206	Richard Langsford	AmoCat BBS	(206)566-1155
Technical Support BBS List	Gary Barr	Digicom BBS	(812)479-1310
Tulsa Oklahoman Area BBS List	Linda Hargraves	Access America	(918)747-2542
U.S.S.R. BBS List	Serge Terekhov	Court Crimson King	7-3832-356722
Virginia AC 703/804	Scott Dickinson	TOSOR BBS	(703)366-4620
Washington DC BBS List	Mike Focke	Interconnect	(703)425-2505
Wildcat! BBS	Jim Harrer	Wildcat! HQ	(805) 395-0650
Wisconsin 608		JW-PC Dataflex-HST	(608)837-1923

BOARDWATCH MAGAZINE

Classified Electronic Bulletin Board Advertisements

Advertise your electronic bulletin board/online information service in **Boardwatch Magazine**. Let our readers know who you are and what you're doing with on-line technology. To order a BBS ad in the Boardwatch Classified BBS ad section, call the Boardwatch BBS at **(303)973-4222** and use our online ad entry system. In addition to standard list information, enter up to **255 characters of text describing your online service**. - all for **\$25 per month**. Master Card or Visa only.

Chat Chalet (201)791-8850 Saddle Brook New Jersey since 04/91. Sysop: Ron Meier. Using Major BBS 5.31 with 16 lines on MS-DOS 80386 with 120 MB storage. Supra at 2400 bps. \$10.00 Monthly fee. Chat System. Send us your picture we will make it a Gif and put it on the BBS for all to see. "Where New Friends Meet"

Jezebel's Parlour BBS (201)927-2932 Flanders New Jersey since 04/92. Sysop: Beverly Delisa. Using TBBS 2.2M with 12 lines on MS-DOS 80386 with 120 MB storage. U.S. Robotics at 9600 bps. \$50.00 Annual fee. Over 3 gigabytes of files, including adult graphics. New in-house scanned Gif files added each week. Online games and databases, user to user chat, conference areas, and adult matchmaking. The BBS with the feminine touch.

THE RED PHONE NETWORK (212)924-1138 New York NY since 09/88. Sysop: Chris Welber. Using PCBoard 14.5a with 6 lines on MS-DOS 80486 with 3200 MB storage. U.S. Robotics at 14400 bps. \$345 Annual fee. Runs on a local area network with RIME, Smartnet & Intelc mail networks. CD-ROM. Custom PC and network support and service. Novell, Lantastic and communications. Visa, Mastercard and Discover accepted. Free voice hotline (212)924-6899

The Westside (213)933-4050 Los Angeles California since 04/87. Sysop: Dave Harrison. Using Metropolis 1.06b with 70 lines on Qnx with 5000 MB storage. AMT 2400 at 2400 bps. \$57 Monthly fee. One of LA's friendliest, largest and most active Adult bbses! Chat Online Games Windows Shareware Files 25,000+ Gifs Animations Adult Stories Public Forums More! 4000+ Members. Special Disabled Vet Senior Student Rate. FREE Trial for Boardwatch Readers!

The B.C.S BBS (213)962-2902 Los Angeles California since 02/92. Sysop: Bill Weinman. Using WildCat 3.55P with 4 lines on MS-DOS 80486 with 2500 MB storage. U.S. Robotics at 16800 bps. \$52 Annual fee. Los Angeles Area Code. Four High Speed Modems (DS) and growing. Gigs of Files. The latest Files added every day. Robocomm, Qsoftware support. Intelligent Conversations. Excellent Conferences, Many Online Services, Home of CalNet. Free Access. Come Join.

The Anterra Network (215)675-3851 Hatboro Pennsylvania since 03/90. Sysop: Steve Ferguson. Using WildCat! 3.52 with 5 lines on MS-DOS 80486 with 3600 MB storage. U.S. Robotics at 19200 bps. \$5 Monthly fee. The Philadelphia Area's Best BBS! Basic Access is free, so give us a call! Over 24,000 Files & 38,000 Messages from 6 National Networks Online. Many online games (some Multi-User Real Time). "The Best Game of Trade Wars in the 215 Area Code".

The Newtown Express BBS (215)860-9724 Newtown Pennsylvania since 10/91. Sysop: Anthony Maglietta. Using PCBoard 14.5a with 6 lines on a high-speed LAN with 6000 MB storage. U.S. Robotics at 16.8K bps. \$15 Quarterly fee. Supporting 2400-16.8K and HST. 38,000+ files on-line. 900+ Megs Adult. 5+ Megs of new uploads daily. We do custom scanning! 700+ sigs. You request a door and we will set it up! (1 per subscription). All nodes run on dedicated 386/25's. Call today!

THE PEAK BBS (303)360-7680 Aurora Colorado since 02/92. Sysop: Jon Almon. Using Galaticomm Major 6.02 with 2 lines on MS-DOS 80486 with 1000 MB storage. Practical Peripheral at 9600 bps. \$15.00 Annual fee. The very best & latest shareware each week! Many Forums: Authors, Writers, Modem Games, Cable TV, Communications, TV, Satellite, Humor and More. Chat, E-Mail, Classifieds and Large ADULT area. Online Multi-player GAMES! Free Demo Line 303-360-6089

PCBOARD BBS OPERATORS

Clark Development Company, Inc., developer of PCBoard BBS Software, has made a standing offer to pay **50%** of the cost of classified advertisements in Boardwatch Magazine placed by any BBS that notes their use of **PCBoard 14.5a** or later software. Your cost for an ad here: **\$12.50**

The GaRBaGe DuMP BBS (303)457-1111 Denver, CO & Albuquerque, NM since 12/90. Sysop: Simon Clement/Dean Kerl/David Kerl. Using Galaticomm MBBS 5.31 with 41 lines on Dual 486 LAN Server with 850 MB storage. Supra at 14400 bps. \$ FREE 90 Days fee. Access in Albuquerque: 505-294-5675 FREE w/ Validation Form, INSTANT Validation with Visa/MC. Online ADULT CHAT, files, multiplayer games, UNCENSORED SIGS. 1200+ Calls/Day, PURSUITABLE. Our motto says it all: CAUTION! ADULTS AT PLAY! Voice 505-294-4980.

METROLINE BBS (303)556-3824 Denver Colorado since 06/92. Sysop: Walt Copley. Using TBBS 2.2 with 1 line on MS-DOS 80386 with 20 MB storage. Hayes at 9600 bps. No fee. Phil Becker used this to illustrate his talk at ONE BBSCON. Visit Cyberspace Classroom for on-line classes; write a paper for Professional Publishing; download information on the "RED SQUARE RUN", a 10k race in Moscow on 23 May 1992!

Pinecliffe BBS (303)642-7463 Pinecliffe Colorado since 01/82. Sysop: Craig Baker. Using Ultrabbs 2.09Beta with 14 lines on MS-DOS 80386 with 9500 MB storage. U.S. Robotics at 14400 bps. No fee. Largest BBS in RockyMtn Area. FREE (\$20/yr gets 2hrs/day. \$100 Lifetime membership.) 60,000 zips. CD-Roms online. Games. Home of CDBREG - allows immediate upgrades with credit card. Sysop also runs a computer store. Night Owl \$49. Come help us grow!

Ilsles of Shae (305)321-2410 Fort Lauderdale Florida since 11/86. Sysop: Edward Bush. Using Galaticomm 6.0 with 32 lines on MS-DOS 80486 with 1300 MB storage. Supra at 19200 bps. No fee. We offer Teleconferencing, Online Trivia, Multi-User Interactive Games, Forums, Online Shopping, File Library, Adult Sections, and much much more. Come and try out Florida's Largest Multi-User BBS. Free Demo Account with new Sign-Up.

The Serial Port (313)286-0145 Clinton Twp, Michigan since 03/82. Sysop: Stu Jackson. Using TBBS 2.2M with 8 lines on MS-DOS 80386 with 3600 MB storage. ZyXEL at 16.8 bps. \$45 Annual fee. C'mon by for a chat and a few files. THOUSANDS of Files with Adult sections available. Many on-line games. Call today for a FREE look around, or Download our entire file list for your proofing at a later time. Home of the File Utility MOVE for TBBS!!

Meeting House BBS (401)848-2200 Portsmouth Rhode Island since 01/91. Sysop: John O'Donnell. Using Galaticomm 5.31 with 13 lines on MS-DOS 80486 with 1100 MB storage. Supra at 9600 bps. \$75 Hourly fee. 6 CD ROMS Shareware for Apple, IBM, Commodore, Atari. Adult files. Networked through NE Telephone INFOPATH (32 ch.). Paid users issued a network userid. Live chat on 45 lines & via Public Data Network. Online games. Computer Research Services. MUCH MORE.

Late Nite (402)291-6164 Omaha Nebraska since 12/89. Sysop: John Patrick. Using PCBoard 14.5a with 10 lines on MS-DOS 80386 with 4700 MB storage. U.S. Robotics at 14400 bps. \$3 Monthly fee. GIFs (33,000+ HiRez Adult), ShareWare, OnLine Games and much more. Nebraska's #1 mature GIF source. Home of the LNxxxxnn.GIF series!

The Rainmaker (404)587-4515 Marietta Georgia since 02/91. Sysop: Matthew Giles. Using PCBoard 14.5a with 1 line on MS-DOS 80386 with 300 MB storage. Cardinal at 9600 bps. \$10.00 Annual fee. We specialize in shareware with a special emphasis on programming, genealogy, and OS/2. Sysop provides individual QEdit support. Official Apogee distribution site. Networks include FidoNet, RelayNet and SourceNet. The Cam-Mail QWK mail door is online.

Nitelog BBS (408)655-1096 Monterey California since 02/89. Sysop: Karl Van Lear. Using PCBoard 14.5a with 14 lines on MS-DOS 80486 with 4900 MB storage. U.S. Robotics at 19200 bps. \$18 Quarterly fee. DOS Windows OS2 & ADULT files. Email Conferences. Internet, Usenet, Rime, iLink. For v.32bis call 655-8294. For USR HST call 655-8297. VISA, MasterCard, Discover & American Express accepted. Register/Subscribe Online.

Uncensor BBS (408)736-6694 San Francisco California since 09/92. Sysop: Dave. Using Major BBS 6 with 5 lines on 80386 with 120 MB storage. Supra at 2400 bps. \$10 Monthly fee. Adult chat system, no inhibition. Must be over 18 to call. Reserve your own forum channel for special topic.

SHARPENIT! RBBS (413)786-4706 Agawam Massachusetts since 03/91. Sysop: Michael Scantlen. Using RBBS 17.4A with 2 lines on MS-DOS 80486 with 1000 MB storage. ZOOM VFX V42 V32 at 14400 bps. \$15.00 Annual fee. Multi-Line Family BBS Serving Small Business and the Community. Over 1.0 GB available with Low \$15/Year Membership. Basic Access No Charge. Featuring Echomail Conferences, Theater, Games, EMS-FIRE, Weather-Alert. Official APOGEE NODE #500

Greenpeace - Environet (415)512-9108 San Francisco California since 01/88. Sysop: Dick Dillman. Using TBBS 2.2M with 6 lines on MS-DOS 80286 with 100 MB storage. U.S. Robotics at 2400 bps. No fee. Your source for information about Greenpeace and the environment. Conferences on Toxics, Energy, Forests, Disarmament and more. Greenpeace press releases updated daily. Never a fee, new users welcome!

Baudeville BBS (416)283-0114 Toronto Ontario Canada since 03/92. Sysop: Ian Evans. Using PCBoard 14.5a with 2 lines on MS-DOS 80386 with 2000 MB storage. U.S. Robotics at 14400 bps. \$36 Annual fee. 1200 Usenet areas, RIME, Intelc, Nanet, C2C, Racenet, RF-Net, Throbnert, Medianet, Fidonet. 2+ gigs of files. Over 2200+ conferences. Internet mail. Fido: 1:250/304. The Economical Email Emporium. \$48 membership gets you \$185 in hw/sw coupons!

The U.S.A. BBS (501)863-0311 El Dorado Arkansas since 06/81. Sysop: Jeff Johnson. Using TBBS 2.2 with 4 lines on MS-DOS 80486 with 2500 MB storage. U.S. Robotics at 19200 bps. \$30+ Annual fee. One of the world's oldest BBS. Low yearly rates starting at \$30. A large selection of DOS programs & 1000+ MB Adult GIFS. Adult section. Conference area. Multi-player games. User-friendly system. Truly a unique BBS. Visa & MasterCard welcome.

Cul-de-Sac Bar & Grill (508)429-1784 Holliston Massachusetts since 03/85. Sysop: Pete White. Using TBBS 2.2M with 5 lines on MS-DOS 80286 with 380 MB storage. U.S. Robotics at 14400 bps. \$45 Annual fee. The home of many TBBS/TDBS software packages, and an almost continuous beta site for many TBBS/TDBS software authors. Like Ben Cunningham's 10,000 message system with full screen editing and quoting, and Jeff Johnson's On-Line Sales Manager.

America's Suggestion Box (ASB) (516)471-8625 Ronkonkoma New York since 02/92. Sysop: Joe Jerszynski. Using TBBS 2.2M with 8 lines on MS-DOS 80486 with 2200 MB storage. U.S. Robotics at 14400 bps. No fee. 13000+ files, ASP approved with a rapidly expanding filebase, Boardwatch, USA Today, ODMR, Video Online. Would you like to see a computer product or service improved? Come see why you and ASB can make a difference! Generous access time & download priv.

The Game Peddler BBS (516)493-0186 Commack New York since 09/88. Sysop: John Sirabella. Using WildCat! 3.5P with 5 lines on MS-DOS 80486 with 3600 MB storage. U.S. Robotics at 19200 bps. \$25 Annual fee. What do you get if you cross THE GAME PEDDLER BBS and FISHING? One call and your hooked! Find many thousands of files, 64 Conferences, 50 Doors and 90+ Bulletins. Give us a call today and find out what you have been missing!

House Of Files BBS (516)938-6722 Hicksville New York since 08/85. Sysop: Jim Toro. Using TBBS 2.2 with 24 lines on MS-DOS 80486 with 9900 MB storage. Supra at 19200 bps. \$50.00 Annual fee. Largest file system in New York. Over 100,000 files ALWAYS online. Over 10,000 music files, 10,000 public domain clip art files ad tens of thousands of others. Call us and find out why hundreds of sysops subscribe to our system. Browse around for free!

Wolverine (517)631-3471 Midland Michigan since 07/88. Sysop: Rick Rosinski. Using Searchlight 2.25C with 4 lines on MS-DOS 80486 with 6000 MB storage. U.S. Robotics at 19200 bps. \$35 Annual fee. Mid-Michigan's Largest BBS with over 50,000 files & SEVEN CD-ROM's! Special support for Windows/DESQview/Music/Games/Utils/Amiga. Now THE Official Support BBS for SkyGlobe. ASP-Approved/ModemNews NewsStand/MVP Software Distribution Site

The Adult File Cabinet BBS (517)792-4680 Saginaw, Michigan since 01/91. Sysop: Ronald Gage. Using PCBoard 14.5a/E3 with 2 lines on MS-DOS 80386 with 1500 MB storage. U.S. Robotics at 14400 bps. \$30.00 Annual fee. Large Adult BBS, Visa/MC subscription (\$5.00 surcharge), File trades available, friendly operator and atmosphere. 90 minutes a day for subscribers, no download limits or ratios to bother with. Color scanning available.

AIS Multiline (604)489-4206 Cranbrook, BC Canada since 03/89. Sysop: Chris Pinnell. Using Galacticom 5.31 with 4 lines on MS-DOS 80386 with 1200 MB storage. U.S. Robotics at 16800 bps. \$5.00 Monthly fee. A great place to meet new people, AIS Multiline is one of the fastest growing BBSes in western Canada, offering 2 CD Roms to download from, as well as the latest files from ASP authors, Teleconferencing, friendly users, on-line games - ASK FOR FREE TIME

CARDZ BBS (604)734-5800 Vancouver, BC, Canada since 03/90. Sysop: John Smith. Using TBBS 2.2M with 30 lines on MS-DOS 80486 with 5600 MB storage. U.S. Robotics at 19200 bps. \$60 Annual fee. Specializing in imaging & sound. Home to Fractern, an online real time graphics viewer for any BBS. We also offer NewsByte, 4 CD-ROM's, 10 message and 11 file networks. Amex, Visa or Mcard accepted. 14 Day trial membership given to all new users.

The 3rd Eye Electronic Erotic Magazine (615)227-6155 Nashville Tennessee since 05/86. Sysop: Michael Vetter. Using TBBS 2.2M with 6 lines on MS-DOS 80486 with 1000 MB storage. Hayes at 9600 bps. \$30 Annual fee. A friendly gathering place for couples and singles with an interest in the swinging lifestyle. Personal ads (all lifestyles), digitized photos of members, online chat, adult downloads, club information, Unique echos, lifestyle support, multiuser games.

Sounds Of Silence (615)449-5969 Nashville Tennessee since 07/92. Sysop: Jim Walton. Using Galacticom 6.02 with 32 lines on MS-DOS 80486 with 1300 MB storage. Practical Peripheral at 14400 bps. \$10 Monthly fee. Great "LIVE" Chat and entertainment system. Games, 8 Gigs of files, forums, classifieds. 24 hour access, dating surveys, E-Mail, WATTS line, credit card and 900 billing. 32 high speed lines. Online fortune telling. An interesting system.

The Disk Fix (615)983-8232 Maryville Tennessee since 02/83. Sysop: Tom Wallace. Using WildCat 3.55P with 2 lines on MS-DOS 80386 with 2000 MB storage. U.S. Robotics at 14400 bps. No fee. Over 11,000 MS-DOS/OS2 files in 60 categories. New and updated files added daily. 25,000 messages in 100 conference areas from FidoNet, Intelc, and Realnet. Online multi-player games. Dedicated computer for each node. Join us today!

The White Zone BBS (617)969-3138 Newton Massachusetts since 10/90. Sysop: David Saganey. Using TBBS 2.2M with 8 lines on MS-DOS 80386 with 2700 MB storage. U.S. Robotics at 16.8k bps. \$15-65 Optional fee. 1.5+ Gigs of IBM MS-DOS Shareware, Midi & Soundcard Files, 850+ MB of Adult Graphics, Flight Simulator, Geoworks, Windows, WazWare & More! Online Games, Classified Ads & BBS Listings. Limited Access for Non-Members.

A Vitality Directory (619)634-1912 Carlsbad California since 08/92. Sysop: Steu Mann. Using WildCat! 3.2 with 1 line on MS-DOS 80386 with 120 MB storage. Practical Peripheral at 14400 bps. No fee. Comprehensive resource of Natural Health care Providers and products and services that support people's well-being, and the planet. There is also information on other issues effecting people's vitality.

The File Bank (619)728-4318 Fallbrook California since 02/87. Sysop: Bob Laszko. Using PCBoard 14.5a/E10 with 8 lines on MS-DOS 80386 with 3000 MB storage. U.S. Robotics at 14400 bps. \$60 Annual fee. 1/3/6 mos. subscriptions too. 3 public / 5 subscription lines - all USR modems. 200 RIME conferences. 2 Adult CD-ROMs. The largest Clipper support conference in the world. Call and find out what 8000 users / month are raving about!

Mirage Network-VA/The Coral Reefer BBS! (703)264-3962 Herndon Virginia since 10/90. Sysop: Tully Mars. Using GAP 6/M with 3 lines on MS-DOS 80386 with 1200 MB storage. U.S. Robotics at 38400 bps. \$29+ 1mos-4yrs fee. GIFs & Animations for discriminating Adults. Scanning Services Available. 16550 chips, hard drives, monitors, modems, etc for sale. Online subscriptions 1st call w/VISA or MC. Home of "FUD" section! D/L CORALREG.EXE for offline registrations.

COM*ONE (708)717-9370 Naperville Illinois since 05/92. Sysop: Craig Wells. Using Falken v6.5 with 4 lines on MS-DOS 80386 with 2300 MB storage. Incomm at 2400 bps. \$Fee Varies fee. GVC 9500 V.32 708-717-9379 Windows 3.x large music section with conferences. It's worth downloading, we've got it! CD-Rom disc Store. Files By Mail service. ASP Approved BBS. DLs on first call. THE ONLY Secured BBS System!!! No ULs & No XRated/Porn

Chicago Syslink (708)795-4442 Berwyn Illinois since 06/81. Sysop: George Matyaszek. Using TBBS 2.2M with 9 lines on MS-DOS 80386 with 800 MB storage. Intel at 14400 bps. \$20 Annual fee. CD-ROM means 6,000-12,000 new files available every week! Catering to callers in the 25+ age group, we offer MicroMatch/Find-A-Friend, 60+ Online Games, Online Magazines including Bell Business Report. There's something for everyone! Call Today!

Int'l Fluid Handling Components Assoc. (713)948-9906 Houston Texas since 04/91. Sysop: Terry Horton. Using TBBS 2.2M with 16 lines on PVF DATABASE with MB storage. Codex at 2400 bps. \$TIME ACCESS fee. Information database Pipe Valves Fittings Pumps Compressors Exp. Joints etc. Specs & Faxes for Purch.Engr.. Availability for stocking Distributors. Free Total Quality Management Forum for principals in Mfg. Dist. Purch. Actng. for all industries

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Panasia BBS (818)569-3740 Glendale California since 05/89. Sysop: William Padilla. Using PCBoard 14.5a with 2 lines on MS-DOS 80386 with 80 MB storage. U.S. Robotics at 14400 bps. No fee. We are predominantly an EchoMail operation (very few files). This means you get through FAST! We are a hub for: Intelc, SFnet, Smartnet, Metrolink, and CalLink. We are a node for: ILink. We use the super-FAST MarkMail QWK/REP mail door. Call us!

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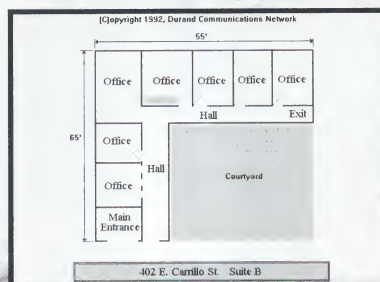
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Fido Tech Stand	31-30-735900	Fidonet Technical Information for Holland	J.J. van der Maas	Utrecht ,Holland
FOG City BBS 125/10	(415)863-9697	Gay Community BBS - AIDS Info - Desktop Publishing - MACs	Bill Essex	San Francisco ,CA
Fred the Computer	(508)872-8461	Newspaper BBS. Wierdnet Newswire. List of MA Libraries	Middlesex News-Adam Gaffin	Framingham ,MA
FreeBoard BBS, The	(804)744-0797	Desktop Publishing File Distribution Network 1:264/212	Bill Hunter	Midlothian ,VA
FSBBS Prototype System	(805)543-8227	Home of FSUUCCP and FSBBS - Unix Communications for DOS	Chris Ambler, Fubar Systems	San Luis Obispo ,CA
Fun Connection	(503)753-8431	Multiline Entertainment - 8 Lines Games/Chat/News	Vincent Reece	Corvallis ,OR
Garbage Dump, The	(505)294-5675	Online Chat Service - Adventure Games - National Chatlink	Dean Kerl/Datasafe	Albuquerque ,NM
Gateway Communications BBS	(714)863-7097	Novell Netware/TCP-IP Shareware Utilities	Gary Gabrick	Irvine ,CA
Gateway On-Line	(313)291-5571	Interactive Chat,MultiplayerGames,Usenet/Internet,E-mail	Jeff Breitner/Bill Mullen	Rockwood ,MI
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General, The	(619)281-8616	Popular File Library - GIF Images	Marc Teitler	San Diego ,CA
GISnet BBS	(303)447-0927	Graphics Information Systems/Mapping topics	Bill Thoen	Boulder ,CO
GLIB	(703)578-4542	Gay and Lesbian Information Bureau - 11 Lines - 9600 bps	Community Educational Svcs. Foundation	Arlington ,VA
GPO WINDO Online Service	(202)512-1387	Fed Information from EPA, DOE, State Department - others.	US Government Printing Office	Washington ,DC

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Hayes Advanced Systems Support	(800)874-2937	Customer Support Line for Hayes Customers. V-series/Ultra	Hayes Microcomputer Products	Peoria, IL
Heartland Free-net	(309)674-1100	Community Online Service - Free Internet E-Mail Boxes	Peoria County Board/Bradley University	Philadelphia, PA
Hepnet/Satronics TBBS	(215)698-1905	Reptile and Amphibian Studies - Poison Snakes/Toads/Fish	Mark Miller	New Hartford, CT
HH Info-Net BBS	(203)246-3747	MS Windows and OS/2 Files our specialty	Lee Winsor	Berkeley, CA
HoloNet	(510)704-1058	National Access, INTERNET, USENET, CHAT, GIFS, FILES	Information Access Technologies, Inc.	Arcata, CA
Home Power Renewable Energy	(707)822-8640	Photovoltaics/Micro-hydro/Generators - Home Power Magazine	Don Kulha/Redwood Alliance	St. Michaels, MD
HouseNet BBS	(410)745-2037	Home Fixup/Repair/Renovation Tips, Advice, and Articles	Gene and Katie Hamilton	Ottawa, Ontario,
Hysterics	(613)231-7144	Amiga File Distribution Network 1:163/109	Russell McOrmond	Atlanta, GA
IBM National Support Center BBS	(404)835-5300	IBM PC User Groups Database - Newsletter Exchange	IBM National Support Center	New York, NY
Inbound/Outbound/Teleconnect	(212)989-4675	Telephone Sales Trade Magazine Online Service	Harry Newton Publications	Marietta, GA
Index Systems	(404)924-8414	Excellent list of Atlanta BBS systems online	Rodney Aloia	Lexington, KY
Infinity World	(606)278-2002	8 line Galacticom System - Many good text publications	Daniel Diachun	Hasbrouch Heights, NJ
InfoHost Demo BBS	(201)335-2253	Demo BBS for InfoHost BBS Software - Multiline - Database	A-Comm Electronics Inc.	Johnson City, TN
Infolink for Upper East Tenn.	(615)434-2551	Space Database - Online Store - Chat	John Williams	Dallas, TX
Inns of Court, The	(214)458-2620	LAN Related Files and Utilities 1:124/6101	Arthur Geffen	Hillsborough, OR
Intel PCEO Support BBS	(503)645-6275	Support for Intel PC Products - Inboard 386/AboveBoard 286	Intel Corporation PCEO Division	New York, NY
Invention Factory	(212)274-8110	46 Lines - 100 Directories - Full Usenet Feed - 8.2 GB	Mike Sussell	Bellevue, WA
Investor's Online Data	(206)285-5359	Online Investment/Stock Market Information/Tech Analysis	Don Shepherdson	San Jose, CA
JDR Microdevices BBS	(408)559-0253	Online Hardware Order - Catalog - 1.1 GB Files - Quizzes	JDR Microdevices	Roswell, GA
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Keith Graham Shareware Support	(914)623-0039	OPTIK, TEXT2COM, CBOOT, very good shareware utilities	Keith P. Graham	Minneapolis, MN
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LANtastic BBS	(602)293-8065	Support for LANtastic local area network	Artisoft Inc.	San Francisco, CA
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LegalEase	(509)326-3238	Legal issues/Forms - Law BBS List	Bill Sorcinelli	Montreal, Quebec
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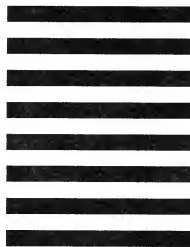
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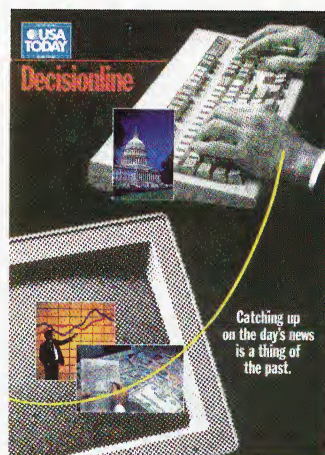
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